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WING JEW

1970

EFFECTS OF TEACHER AND PUPIL EXPECTANCY
UPON SCHOOL ACHIEVEMENT

A Dissertation
Presented to
The Faculty of the Graduate School
University of the Pacific

In Partial Fulfillment
of the Requirements for the Degree
Doctor of Education

by
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January 1970

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EFFECTS OF TEACHER AND PUPIL EXPECTANCY
UPON SCHOOL ACHIEVEMENT

Abstract of Dissertation

The effects of self-fulfilling prophecies have been observed under various situations in the past, but Rosenthal and Jacobson's recent South San Francisco study has probably stimulated increased public and professional interest in the effects of expectations on learning. It was felt that additional research in this area was desirable in order to further examine how and to what extent expectancies can influence learning situations.

This study was designed to study the effects of informing randomly selected pupils and their teachers that these particular pupils had greater potential for school success than they had been demonstrating. It was hypothesized that if teachers and pupils developed a greater level of expectancy, improvements would be observed in school performance. In addition to the initial interviews for transmitting this information, reinforcement was provided for some of the sample students and teachers. The various possible combinations of the independent variables of: (1) informing pupils, (2) informing teachers, and (3) reinforcement led to the formation of eight cells. Two hundred pupils were selected at random from the seventh grade population and assigned randomly to the various treatments with cell sizes of twenty-five each.

Statistical procedures for this 2x2x2 factorial design required separate analyses of variance for each dependent variable examined. The dependent variables consisted of: (1) intelligence quotients, (2) arithmetic achievement, (3) reading achievement, (4) grade point averages, (5) attendance, (6) teacher ratings of pupils on school success and attitudes, and (7) pupil self-ratings on school success and attitudes. It was felt that these areas would be the ones most likely to be affected by changes in expectancy. Some of the dependent variables were treated separately and then combined under factor analysis to produce additional factors requiring analyses of variance.

The only dependent variable that showed any significant difference ($p < .05$) in either main effects or interaction effects under analyses of variance was attendance. It was found that the teacher informed condition had significantly fewer days of absence than the teacher not-informed group. In addition the reinforcement condition showed a significant reduction in absences as compared to the non-reinforced treatment group. One possible conclusion would be that the treatment brought about some small, and perhaps subtle, changes in teachers and pupils to cause the improved attendance. However, additional evaluation is needed before such a conclusion can be accepted. In a factor analysis of the achievement variables a general factor was obtained which, when subjected to analysis of variance, showed a significant ($p < .05$) interaction effect between teacher informed and pupil informed. It would appear that informing the teacher or informing the pupil does have a positive and significant effect on achievement, but when both are informed the effects seem to be diminished.

Additional conclusions include the following:

- 1) What was observed in this study might have been only the beginning of changes in pupil behavior. A study extending over a period of several years might reveal other changes.
- 2) Certain intangible changes in pupil self perceptions might have occurred but were not measured by the instruments used.
- 3) Some amount of change appeared to have taken place and suggests that additional research is needed to consider possible educational implications.

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W.J.

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CHAPTER I

THE PROBLEM AND DEFINITIONS OF TERMS

I. INTRODUCTION

The growing concern for the nation's poor has led to the development of a variety of projects aimed at meeting the needs of deprived children. However, many of the compensatory education programs financed under Title I of the Elementary and Secondary Education Act appear to have been unsuccessful in significantly improving the education of disadvantaged children.¹ Listed among the ten most significant research findings² that have come out of Title I were the results of a South San Francisco study conducted by Rosenthal and Jacobson³ which suggested that how well students do in school depends in part on how well teachers expect them to do. Their study showed that significant intellectual gains could be produced by children whose teachers had been informed that the children were tested and found to be on the verge of making significant improvement. Although no other special treatment was given other than informing the teachers, the predicted intellectual gains did occur.

¹U.S. Commission on Civil Rights, Racial Isolation in the Public Schools, Vol. 1 (Washington: U. S. Government Printing Office, 1967), p. 138.

²"Research Clues," Today's Education, 57:72-3, November, 1968.

³Robert Rosenthal and Lenore Jacobson, Pygmalion in the Classroom (New York: Holt, Rinehart and Winston, Inc., 1968), pp. 61-71.

Recognition of the important implications of the South San Francisco Oak School study has been evidenced by the wide publicity it has received. Among the publications mentioning the results of the study were Good Housekeeping,⁴ Time,⁵ Oakland Tribune,⁶ Education Summary,⁷ Education U.S.A.,⁸ Phi Delta Kappan,⁹ and The Personnel and Guidance Journal.¹⁰ Furthermore, other educators are giving greater recognition to the significance of this almost obvious, but perhaps overlooked, factor in raising the achievement level of pupils. "Danger in Setting School Goals Low,"¹¹ "Pupils Fail if they are Expected To,"¹² and similar newspaper headings are bringing this idea to public attention.

In 1967 a quasireplication of the Oak School experiment in South

⁴Helen Valentine, "The Young Wife's World," Good Housekeeping, 167:80, October, 1968.

⁵"Blooming by Deception," Time, 92:62, September 20, 1968.

⁶News item in the Oakland Sunday Tribune, September 15, 1968.

⁷News item in the Education Summary, August 15, 1967.

⁸News item in Education U.S.A., September 25, 1967.

⁹James J. Buckley, "Who is Pygmalion, Which is Galatea?" Phi Delta Kappan, 50:124, October, 1968.

¹⁰Robert Nueremberger, "Book Review: Pygmalion in the Classroom", The Personnel and Guidance Journal, 47:575-578, February, 1969.

¹¹News item in the Stockton Record, November 12, 1968.

¹²News item in the San Francisco Sunday Examiner and Chronicle, October 27, 1968.

San Francisco was completed by Conn, Edwards, Rosenthal, and Crowne in a middle or upper middle class community labeled the Crest School experiment.¹³ The findings four months after teachers were led to believe some of the children were "special" indicated that favorable teacher expectations produced positive, although not statistically significant, results. Flowers¹⁴ employed fictitious ability grouping in two junior high schools to learn about the effects on pupil performance when teachers had greater academic expectations. Some differences were found in performances between those labeled average and those labeled high although in reality both were average. Pitt¹⁵ employed fictitious IQ scores in a study of 165 fifth grade boys divided into three groups. Actual IQ's of one group were given teachers, but fictitiously lower IQ's were given to a second group, and the third group were given fictitiously higher IQ's. His finding revealed no differences in achievement among the groups, but differences in pupils' self-ratings were discovered.

¹³Lane K. Conn, Carl N. Edwards, Robert Rosenthal, and Douglas P. Crowne, "Emotion Perception and Response to Teacher Expectancy in Elementary School Children" (unpublished paper, Harvard University, 1967), cited by Robert Rosenthal and Lenore Jacobson, Pygmalion in the Classrooms (New York: Holt, Rinehart Winston, Inc., 1968), pp. 138-45.

¹⁴Charles E. Flowers, "Effects of an Arbitrary Accelerated Group Placement on the Tested Academic Achievement of Educationally Disadvantaged Students" (unpublished Doctoral Dissertation, Teachers College, Columbia University, 1966).

¹⁵Clifford C. V. Pitt, "An Experimental Study of the Effects of Teachers' Knowledge or Incorrect Knowledge of Pupil IQ's on Teachers' Attitudes and Practices and Pupils' Attitudes and Achievement" (unpublished Doctoral Dissertation, Teachers College, Columbia University, 1956).

Similar studies in the medical professions as well as in sociological research have indicated that expectancies of the therapist can significantly affect the outcomes. Several of these studies have been summarized by Rosenthal and Jacobson.¹⁶ Not all of the reviews of Rosenthal and Jacobson's Oak School study have been complimentary, however. Buckley¹⁷ criticized the Oak School study and he suggested that flaws in the design caused their findings to be questionable. Thorndike¹⁸ was extremely critical of Rosenthal and Jacobson's study because he felt that the conclusions were based upon faulty experimental design and unsatisfactory evaluation techniques. The Tests of General Ability test was criticized by Thorndike on the basis of the extremely high and extremely low scores that were obtained. Thorndike commented that it would have been better if the Oak School study had not been done. The Oak School study was criticized by Jensen¹⁹ because teachers were allowed to administer the tests. Jensen felt that this injected an uncontrolled variable which could have significantly affected the results.

¹⁶Rosenthal and Jacobson, op. cit., pp. 3-44.

¹⁷Buckley, loc. cit.

¹⁸Robert L. Thorndike, Review of R. Rosenthal and L. Jacobson, Pygmalion in the Classroom, (New York: Holt, Rinehart and Winston, 1968) in American Educational Research Journal, 5:708-711, November, 1968.

¹⁹Arthur R. Jensen, "How Much Can We Boost I.Q. and Scholastic Achievement?" Harvard Educational Review, 39:108, Winter, 1969.

The present study attempted to amplify the work that was done by Rosenthal and Jacobson by considering not only IQ changes, but school achievement, school attendance, teacher ratings of the pupil, and pupil self-ratings. In addition to merely informing teachers of supposed potential, a portion of the pupils were also informed of this potential and in certain cases these predictions were reinforced periodically by teacher and pupil contacts. Some attention was also given in this study to the controlling of Hawthorne effects which Rosenthal and Jacobson felt might have influenced results in their study. It was anticipated that bolstering teacher and/or pupil expectations would result in academic gains.

Importance of the Study. Holding teachers responsible "for much that is rotten in the schools" was considered a revolutionary development in the recent American educational scene by Sobel.²⁰ Foster²¹ suggested that the teacher must be recognized as the prime and indispensable change agent in the teaching-learning process. The reason that 15 per cent of all children who are in our public schools are doing poorly may be related to the fact that too little has been expected of them by teachers. Children who do poorly also seem to come from

²⁰Harold W. Sobel, "The New Wave of Educational Literature," Phi Delta Kappan, 50:110-11, October, 1968.

²¹Herbert L. Foster, "The Inner-City Teacher and Violence: Suggestions for Action Research," Phi Delta Kappan, 50:172-75, November, 1968.

homes of parents who are in the bottom quarter of the population in income.²² The expectations of the disadvantaged child in the slum and ghetto schools may be different from the middle and upper income children. More knowledge is needed about the relative effects of teacher expectancy and pupil self-expectancy upon future performance. Research along the lines of this proposed study can furnish information to teachers who are willing to engage in self-examination. Such studies could also serve to impress upon teachers the need for appraising their attitudes toward and expectations of the children they teach and influence daily.

Riessman,²³ Friedenberg,²⁴ Passow,²⁵ Dodson,²⁶ and others have voiced concern about the many problems which plague our schools, particularly the urban schools in slum areas. Much experimentation has been done in the name of school improvement, but Jensen concluded that applying more of the same approach to compensatory education was not

²²Robert J. Havighurst, "Requirements for a Valid 'New Criticism'," Phi Delta Kappan, 50:20-1, September, 1968.

²³Frank Riessman, The Culturally Deprived Child (New York: Harper and Row, 1962).

²⁴Edgar Z. Friedenberg, "Requiem for the Urban School," Saturday Review 50:94, November 18, 1967.

²⁵A. Harry Passow (ed.), Education in Depressed Areas (New York: Bureau of Publications, Teachers College, Columbia University, 1963).

²⁶Dan W. Dodson, "An Urgent Concern," Saturday Review. 48:82-3, May 15, 1965.

likely to produce the desired results.²⁷ After examining the characteristics of many compensatory education programs Durham²⁸ stated that they contained nothing really "new."

Flanagan²⁹ listed a) teacher salaries, b) teacher experience, c) number of books in the school library, and d) per pupil expenditure as the four factors closely and uniquely associated with school outcomes such as achievement and going to college and staying in school. Apparently the effects of teacher expectations were not considered as a possible factor. However, the other sources that were just cited imply that expectancy could be an important consideration. Studies dealing specifically with effects of teacher expectancy are very limited.³⁰ The possibility that this study might provide more thorough answers to the problems involved in improving educational opportunities for young people makes it important, as well as challenging.

II. THE PROBLEM

This study attempted to evaluate some methods for modifying

²⁷Jensen, loc. cit.

²⁸Joseph T. Durham, "Compensatory Education: Who Needs It?", The Education Digest, 35:18-21, December, 1969.

²⁹John C. Flanagan and John T. Dailey, "Cause and Effect in Education," in William M. Alexander (ed.) The Changing Secondary School Curriculum (New York: Holt, Rinehart and Winston, 1967). pp. 54-55.

³⁰Rosenthal and Jacobson, op. cit., p. 58.

teacher and pupil expectancies and the accompanying changes in performance that might result. More specifically, it was designed to answer the question: Will the suggestion to a teacher or a student that the student's academic potential is higher than he is currently exhibiting affect his subsequent academic performance?

The following statements represent conceptual hypotheses for this study.

1. Students who have been advised of their potential for improving their current level of school success or students whose teachers have been similarly informed of this potential will improve in school achievement in basic academic skills, IQ, attendance, and attitudes over students for whom this information is not made available.
2. Reinforcing the same students or teachers periodically with information suggesting the student's greater success potential will result in even greater improvement.

The operational definitions of each of the concepts used in this study are listed below.

1. Students - The randomly selected pupils from a seventh grade school population at one junior high school in Stockton, California.
2. Advised - This term was used synonymously with the concept of informing. With students the term means:
 - a. Demonstrating interest in the child

- b. Informing him that he has greater potential as indicated by his prior school records
- c. Discussing student's reaction to this information
- d. Asking for any ideas on how student might improve
- e. Informing student he will be seen a few times this school year
- f. Expressing interest in his future performance.

With teachers the term advised means:

- a. Informing the teachers involved that a certain number of pupils have been selected on the basis of their prior school records and test data to receive some motivational counseling aimed at raising their level of school success
- b. Explaining that these pupils have been identified as having the potential to show gains
- c. Presenting a list of those pupils to the teachers
- d. Asking teachers for comments concerning

any or all of the pupils.

3. Basic academic skills - Reading and arithmetic performance will specifically be measured in this study.
4. Teachers - All English and arithmetic teachers for the sample students included in this study.
5. Attendance - The number of days of school absence for the academic school year 1968-1969.
6. Intelligence Quotient - The measures obtained from the Tests of General Ability by John C. Flanagan administered in groups.
7. Attitudes - Estimates of how a student feels or reacts to the school situation. A check list of several items using a summated scale³¹ will be given to teachers (see Appendix A) to rate the students and a similar rating form (see Appendix B) will be provided to students for self-evaluation.
8. Reinforcement - The follow-up contacts with teachers and pupils to reaffirm the higher expectations indicated to them in the first interview. With students reinforcement means:
 - a. Inquiring about the student's current

³¹Douglas W. Matheson, Richard L. Bruce, and Kenneth L. Beauchamp, Introduction to General Experimental Psychology (New York: Holt Rinehart and Winston, Inc., 1968), p. 157.

progress in school subjects without making value judgements or criticizing him.

- b. Making positive and encouraging comments to student
- c. Restating the belief that he has greater potential than he has displayed
- d. Informing him that he will be seen again next quarter
- e. Reminding him that his progress will be viewed with interest.

With teachers the term means:

- a. Restating that those pupils on the lists were expected to show improvement
- b. Asking for teacher comments and observations on progress being made by student.

Another treatment will be attempted in the study as a method of studying Hawthorne effects. This treatment will be given to both teachers and pupils of one control group in which neither teachers nor pupils were advised to expect greater success. The treatment for this group included:

- a. Showing interest in the pupil
-

- b. Discussing school progress and school satisfactions
- c. Informing him that he will be seen again at a future time.

9. Periodically - One contact with each teacher and each pupil during the third school quarter and one contact during the fourth school quarter.

More specific statements of the conceptual hypotheses are present in the following experimental hypotheses.

1. Seventh grade students who have been advised of their potential for improving above their current level of school success or seventh grade students whose English and math teachers have been similarly informed of this potential will have:

- a. Higher scores in reading achievement tests than the controls
- b. Higher scores in math achievement tests than the controls
- c. Higher IQ's as measured by group tests than the controls
- d. Higher semester grades than the controls
- e. Fewer days of absence than the controls
- f. Higher teacher ratings on school attitudes than the controls

II. SUMMARY

This study was designed to re-examine certain findings of previous research studies. Furthermore, it was intended to extend the investigation done by Rosenthal and Jacobson by studying some relationships that have not been adequately explored. The topic under consideration could have vital educational implications.

The next chapter will present a review of the work other researchers have completed in this area. Detailed discussion of the procedures and rationale will be found in chapter three. The remaining chapters are devoted to a report of the findings, discussion of the data, and conclusions.

CHAPTER II

REVIEW OF RELATED LITERATURE

A large portion of this chapter will be concerned with examples of self-fulfilling prophecies. Rosenthal and Jacobson have explored this subject extensively and have described self-fulfilling prophecies as the process in which "one person's expectation for another person's behavior can quite unwittingly become a more accurate prediction simply for its having been made."¹ Several of the professional journals and lay publications which have given attention to this topic were cited in Chapter One, but a more detailed review will be presented here.

I. SELF-FULFILLING PROPHECIES

Sobel² stated that an important development in current educational thought is the growing recognition and increased willingness to examine the impact of educational expectations upon people. In 1969 the Los Angeles School District, apparently acting upon their concern over the effects of teacher expectations upon student success, suspended their intelligence testing program in primary grades.³ Lagemann⁴ cited

¹Rosenthal and Jacobson, op. cit., p. 7.

²Sobel, op. cit., p. 110.

³Associated Press dispatch, Stockton Record, January 31, 1969.

⁴John Kord Lagemann, "Self-Fulfilling Prophecy--A Key to Success," The Reader's Digest, 94:80-81, February, 1969.

Rosenthal and Jacobson's study in his article on the self-fulfilling prophecy. In her discussion of the changing concept of the unchanging IQ Stern⁵ referred to Rosenthal and Jacobson's work. Chall⁶ also referred to the same study in her discussion of problems in the teaching of reading. Recently, Cohen⁷ addressed himself to the problem of cultural deprivation and suggested that expectancy is a factor in under-achievement. He expressed concern that the deprived youngster has become a victim of the low expectations inherent with the poor. Many more examples can be cited but these serve to illustrate some of the public concerns that are being generated. Much of the current attention seems to have resulted from the findings reported by Rosenthal and Jacobson.⁸ Rosenthal has worked extensively in this area and explored the effects of experimenter expectancies thoroughly in his text which discusses the many ramifications of experimenter expectancy.⁹

Goethe proposed that we "treat people as if they were what they might be and you help them become what they are capable of being."¹⁰

⁵Carolyn Stern, "The Changing Concept of the Unchanging I.Q.," C.T.A. Journal, (May, 1969), pp. 13-16.

⁶Jeanne Chall, "Beginning Reading: Where Do We Go From Here?" Today's Education, 58:39, February, 1969.

⁷Alan S. Cohen, "Local Control and the Cultural Deprivation Fallacy," Phi Delta Kappan, 50:25, January, 1969.

⁸Rosenthal and Jacobson, op. cit., pp. 121-145.

⁹Robert Rosenthal, Experimenter Effects in Behavioral Research (New York: Appleton, 1966).

¹⁰Lagemann, op. cit., p. 80 quoting Goethe.

Merton¹¹ discussed the self-fulfilling prophecy and presented several pertinent cases to illustrate his beliefs. He provided examples which show that many feats considered impossible have been accomplished by people who were ignorant of the fact that the task was believed impossible to carry out. Allport¹² also expounded upon the effects of expectancies in his writings. Jastrow¹³ believed that in many human endeavors we fall short of doing our best because of an anticipation or remote feeling of possible failure. Menninger¹⁴ has concluded that mentally ill people are being cured today because psychiatrists and others believe them to be curable. At another time in history mental illness was incurable because the therapist had lost faith and hope and did not believe that certain types of patients were curable.

Some of the more obvious examples of the self-fulfilling prophecy in action can be found in the success stories of people who have succeeded in spite of many adversities primarily because they maintained high self expectancies or else were assisted by others to

¹¹Robert King Merton, "The Self-fulfilling Prophecy," Antioch Review, 8:193-210, 1948.

¹²Gordon Willard Allport, The Psychology of Rumor (New York: Russell & Russell, Inc., 1965), pp. 9-47.

¹³Joseph Jastrow, Fact and Fable in Psychology (Boston: Houghton Mifflin Company, 1900), p. 301.

¹⁴Karl Menninger, Review of: J. S. Bockoven, Moral Treatment in American Psychiatry (New York: Springer, 1963), Bulletin of the Menninger Clinic, 28:275, 1964.

maintain this positive image.¹⁵ Albert¹⁶ related the case of a man who had a reasonable chance for success, but who had an unfounded expectation of losing his job. His subsequent depression and behavior led to his inability to carry out his duties and ultimately fulfilled his original fears. Another example of the effects of expectations of failure was cited by Albert¹⁷ in the case of the person who consciously believed he could not do a task, yet under hypnosis was able to adequately carry it out without the failure expectation to hinder his performance.

II. EXPERIENCE AND EXPECTATIONS

One's expectancy tends to affect his behavior but it also seems that one's early experiences result in expectations which formulate response patterns. Kelly, Rogers, Maslow, and Combs¹⁸ generally concur that adequate persons are a product of their experiences. It is only when one can accurately perceive a situation that he can behave appropriately. Yet, this is only possible when perceptions are not distorted

¹⁵Lagemann, op. cit., p. 82.

¹⁶Dora Albert, Stop Feeling Tired and Start Living (Englewood Cliffs, New Jersey: Prentice Hall, Inc., 1959), p. 7.

¹⁷Albert, op. cit., pp. 21-22.

¹⁸Earl C. Kelly, Carl R. Rogers, A. H. Maslow, and Arthur W. Combs, Perceiving, Behaving, Becoming, Association for Supervision and Curriculum Development, (Washington, D.C.: NEA, 1962).

by unrealistic expectations.¹⁹ Rotter²⁰ stated that an organism develops an expectancy of reinforcement, but the reinforcement can be negative or positive. The implications of experience and its effect upon expectations are quite clear.²¹ How can slum children have the same kinds of expectations teachers might expect of them? How can teachers have realistic expectations of disadvantaged children? The dissimilarity in experiences would seem to indicate that commonality of expectations might be difficult to develop. More research and understanding is greatly needed at this time.

III. EXPECTATIONS AND BEHAVIOR

Kumar²² discovered that counselors tended to view a client who was perceived as friendly to be even friendlier while clients perceived as hostile seemed to be even more hostile. Goldstein²³ found that the

¹⁹Carl R. Rogers, "Towards Becoming a Fully Functioning Person," Perceiving, Behaving, Becoming, Association for Supervision and Curriculum Development (Washington, D.C.:NEA, 1962), p. 23.

²⁰Julian B. Rotter, Social Learning and Clinical Psychology, (Englewood Cliffs, N.J.: Prentice Hall, 1954). pp. 112-119.

²¹Arthur W. Combs, "A Perceptual View of the Adequate Personality," Perceiving, Behaving, Becoming, Association for Supervision and Curriculum Development (Washington, D.C.:NEA, 1962), p. 53.

²²Usha Kumar, "Client and Counselor Responses to Prior Counselor Expectancies and to an Initial Interview" (unpublished Doctoral dissertation, The Ohio State University, 1965).

²³Arnold P. Goldstein, "Therapist and Client Expectation of Personality Change and Its Relation to Perceived Change in Psychotherapy" (unpublished Doctoral dissertation, The Pennsylvania State University, 1959).

patients' expectations are important to the outcome of therapy. It was reported by Burke²⁴ that one's self concept will be similar to reactions about self from others and that liking for others is closely linked to reactions about self from others. The expectations of the teacher, counselor, therapist, parent, or other significant persons, as well as the self-expectations of the client, student, or counselee are involved in most instances and tend mutually to affect a given situation.

Studies have shown that expectations that are experimentally induced can become determinants of outcomes directly related to these induced expectancies. For example, Rosenthal and Jacobson²⁵ noted that randomly selected children who were labeled as superior tended to be seen by teachers as happier, more curious, more interesting and having a better chance of success in later life. Furthermore, these children were seen as more appealing, better adjusted, more affectionate, and less in need of social approval. This serves as an excellent demonstration of the power of suggestion. Implications of these findings seem very significant for educators at all levels.

²⁴Richard Leonard Burke, "Rating of Self and Others As A Function of Expectations and Evaluations" (unpublished Doctoral dissertation, Boston University, 1962).

²⁵Robert Rosenthal and Lenore F. Jacobson, "Teacher Expectations for the Disadvantaged," Scientific American, 218:19-23, April, 1968.

IV. GROUP EXPECTATIONS AND BEHAVIOR

Expectancies are not entirely individual matters. Allport²⁶ wrote that "what people expect determines their behavior," and he indicated that large groups can be influenced as a body. Some of Allport's examples of the psychology of rumors show that mass reactions can result when expectancies of many people are affected in a similar manner. Such group expectations can conceivably influence the destiny of a nation. The psychology of groups suggests that wars can be prevented by changing expectations. There appear to be many ways in which groups can be influenced. Much of the massive advertising campaigns launched by business seems to be effective in influencing the spending patterns of people and influencing their expectations. Educators do not seem to have met with the same degree of success in influencing people. McLuhan²⁷ speaks of the impact of mass media and the powerful influence of media upon people. An important clue might be found here for education in the effective use of media.

The forced failure of a reasonably sound banking institution due to group hysteria was described by Merton.²⁸ On Black Wednesday a mass

²⁶Gordon Willard Allport, "The Role of Expectancy," Tensions That Cause Wars, Hadley Cantril, editor (Urbana, Illinois: University of Illinois, 1950), pp. 43-78.

²⁷Marshall McLuhan, Understanding Media (New York: McGraw-Hill Book Company, 1964), pp. 316-320.

²⁸Merton, op. cit., p. 194.

withdrawal of funds by depositors based entirely upon a rumor of insolvency led to the sudden failure of the bank. One country's expectations of another's hostility often leads to self defensive counter measures which in turn aggravate the tensions. Wars then can be viewed as a group self-fulfilling prophecy on the part of the two countries involved.²⁹ Similar group attitudes have been observed in countries or geographic provinces which affect the treatment or expectations of a segment of the population. These have been labeled as racial discrimination or group prejudices, but they seem to originate from the basic expectations held by members of the majority group.³⁰

V. EXPERIMENTER BIAS

Complete objectivity is the goal of most experimenters but in practice the expectancies of the experimenter can, and do, enter into a study. Cannell³¹ conducted a study of the research interview as used in social science and found that the interviewer's personal expectations and attitudes did not affect the results of interviews and that differences might have been due to differences in the subject matter rather

²⁹Allport, Tensions, loc. cit.

³⁰Gordon Williard Allport, The Psychology of Rumor (New York: Russell and Russell, Inc., 1965), p. 103.

³¹Charles Frederick Cannell, "A Study of the Effects of Interviewers' Expectations Upon Interviewing Results" (unpublished Doctoral dissertation, The Ohio State University, 1953).

than expectations. Getter, Mulry, Holland, and Walker³² found that with ten examiners involved in their study no differences in subjects' intellectual performances could be attributed to expectancy of behavior, although examiners were led to expect superior performances from a third of the subjects, inferior performances from another third, and were not given any expectancies for the remaining third. Pflugrath³³ reported that counselor expectancies were not effective in producing change in either counselor or client attitudes.

Wartenberg-Ekren³⁴ reported that in a study involving eight examiners and thirty-two subjects experimenter expectancy biases were not apparent. The subjects were administered the Block Design Test of the W.A.I.S. Prior to administering the tests the examiners were falsely told that certain subjects were earning higher grades in school. However, the mean scores of the two subject groups did not show significant differences. These studies would seem to indicate that bias does not necessarily affect a study.

³²H. Getter, R. C. Mulry, C. Holland, and Patricia Walker, "Experimenter Bias and the WAIS " (unpublished data, University of Connecticut, 1967), cited by Robert Rosenthal and Lenore Jacobson, Pygmalion in the Classroom (New York: Holt, Rinehart and Winston, Inc., 1968), p. 34.

³³Jack C. Pflugrath, "Counselor Bias' The Effect of Counselor Expectation Upon the Attitudes of Counselors and Their Clients" (unpublished Doctoral dissertation, The University of North Dakota, 1965).

³⁴Ursula Wartenberg-Ekren. "The Effect of Experimenter Knowledge of a Subject's Scholastic Standing on the Performance of a Reasoning Task" (unpublished Master's thesis, Marquette University, 1962).

On the other hand, Kramer and Brennan,³⁵ conducting a study in an institutional setting, discovered that if a schizophrenic patient were treated like a normal person he would respond in an essentially normal manner. However, it was also noted that previous workers who had expected the schizophrenic to be different observed the different behavior they expected. By treating a person in a responsible manner and treating him as if he were responsible improved behavior develops. Negative expectancies tend to bring forth undesirable behavior. Larrabee and Kleinsasser³⁶ found that on administrations of the Weschler Intelligence Scale for Children the IQ's were 7.5 points higher on the average when the child's examiner expected superior performance.

These few cases do not prove conclusively that bias is possible or not possible, although they do indicate that experimenter bias can become a factor, but not necessarily so. It seems that experimental design is quite important in avoiding bias. Rosenthal³⁷ discussed the double blind design as one which can increase the degree of objectivity

³⁵Ernest Kramer and Edwin P. Brennan, "Hypnotic Susceptibility of Schizophrenic Patients," Journal of Abnormal and Social Psychology, 69:657-659, 1964.

³⁶L. L. Larrabee and L. D. Kleinsasser, "The Effect of Experimenter Bias on WISC Performance" (unpublished paper, St. Louis, Mo.: Psychology Associates, 1967), cited by Robert Rosenthal and Lenore Jacobson, Pygmalion in the Classroom (New York: Holt Rinehart, and Winston, Inc., 1968), p. 34.

³⁷Rosenthal, op. cit., p. 367.

in a study. Campbell and Stanley³⁸ also suggested ways to avoid the contaminations of objectivity. There are subtle ways in which expectations can deceive even the astute scientist. In 1929 Pavlov assumed that some of his theories involving white mice seemed to be supportive of Lamarck's theory.³⁹ Later he explained that his conclusions were not true because it was the experimenters who were doing a better job of teaching rather than the differences in the rats that were being observed.

Rosenthal and Jacobson's widely publicized study has been under criticism by other researchers because the experimental design appeared to be faulty. Barber⁴⁰ and his associates conducted five investigations involving 501 subjects and fifty-one experimenters to study experimenter bias effects. Each of the five investigations failed to demonstrate that the experimenters' expectancy biases influenced their results. The use of the Tests of General Ability was criticized by Thorndike.⁴¹ Thorndike considered the data gathering and data analysis procedures in Rosenthal and Jacobson's study very inadequate and felt that the

³⁸Donald T. Campbell and Julian C. Stanley, Experimental and Quasi-Experimental Designs for Research (Chicago: Rand McNally & Company, 1963), p. 25.

³⁹Benjamin Gruenberg, The Story of Evolution (Princeton, N.J.: Van Nostrand, 1929), pp. 160-161.

⁴⁰Theodore Xenophon Barber, David S. Calverley, Albert Forgione, John D. McPeake, John F. Chaves, and Barbara Bowen, "Five Attempts to Replicate the Experimenter Bias Effect," Journal of Consulting and Clinical Psychology, 33:1-6, February, 1969.

⁴¹Thorndike, op. cit., p. 708.

conclusions were suspect. An article by Gephart and Antonoplos⁴² examines some of the various criticisms raised and discussed the Hawthorne effects, demand characteristics, halo effects, and placebo effects which also affect investigations of this type. Rosenthal⁴³ responded to Barber's work with an article in defense of experimenter expectancy in which he points out differences between his studies and Barber's studies.

VI. STUDIES WITH ANIMALS

Some of the most carefully controlled studies on experimenter bias and the effects of expectations have been conducted in laboratory situations with animals. The general consensus is that experimenters with high expectancy seem to obtain better results. Whether these experiments with laboratory animals can approximate normal uncontrolled human situations might be debatable, but the findings do lend support to the self-fulfilling prophecy. Cordaro and Ison⁴⁴ completed a study in which seventeen experimenters were led to believe that the aquatic worms they observed fell into either a) the group of worms already taught to

⁴²William J. Gephart and Daniel P. Antonoplos, "The Effects of Expectancy and other Research-Biasing Factors," Phi Delta Kappan, 50:579-583, June, 1969.

⁴³Robert Rosenthal, "On Not So Replicated Experiments and Not So Well Results," Journal of Consulting and Clinical Psychology, 33:7-10, February, 1969.

⁴⁴Lucian Cordaro and James R. Ison, "Observer Bias in Classical Conditioning of the Planarian," Psychological Reports, 13:787-789, 1963.

turn or b) the group of worms not previously taught to turn. Actually the worms were randomly chosen and only the experimenters' beliefs were different. It was discovered that when experimenters expected higher performances they observed more turning and contracting in the worms than the experimenters who were led to expect less.

Rosenthal and Lawson⁴⁵ reported that a study of the effects of experimenter bias on the apparent learning of laboratory rats led to the conclusion that experimenters expecting to find competent performance of their rats in learning tend to do so, and the experimenters who expected the reverse likewise found the reverse to be true. Forty-seven per cent of those who were led to believe they were working with "dull" rats believed the subjects to be uneducable, but only five per cent of the experimenters assigned "bright" rats felt they were uneducable.

Rosenthal and Fode⁴⁶ conducted another study with albino rats. The rats were to be taught to run to a darker arm of a T-shaped maze. Half of the experimenters were told that the rats were maze bright, and half of them were told the rats were maze dull. The rats believed to be brighter showed daily improvement, but those believed to be dull improved only to the third day and then worsened.

An interesting case study of a horse has been described by

⁴⁵Robert Rosenthal and Reed Lawson, "A Longitudinal Study of the Effects of Experimenter Bias on the Operant Learning of Laboratory Rats," Journal of Psychiatric Research, 2:61-72, 1964.

⁴⁶Robert Rosenthal and Kermit L. Fode, "The Effect of Experimenter Bias on the Performance of the Albino Rat," Behavioral Science, 8:183-189, 1963.

Rosenthal.⁴⁷ The horse, known as Clever Hans, had demonstrated the ability to add, subtract, multiply, and divide as well as perform other feats which seemed amazing for an animal. Careful observations and experiments by Pfungst⁴⁸ led to the discovery that the horse's ability was contingent upon the expectancy of the questioner. Clever Hans was extremely alert to subtle signs and had learned that whenever people asked a question they would then lean forward slightly to watch his hoof. That was the signal to start tapping. The almost imperceptible head movements of the questioner when the correct number of taps had been made signaled Hans to stop tapping. Pfungst devoted much effort to solving the mystery and concluded that they were misled earlier because they searched for the answers from the horse when it was actually the questioners who unintentionally supplied the answers. Nevertheless, Clever Hans undoubtedly had extraordinary perceptual sensitivity which surpasses that of many humans.

Other studies are available and would lend additional support to the self-fulfilling prophecy. In studies involving human beings it is not easy, and sometimes impossible, to control the variables and obviously individual differences in people are greater than in laboratory animals. The contribution of these experiments are nonetheless valuable

⁴⁷Robert Rosenthal, "Clever Hans: A Case Study of Scientific Method," Introduction to O. Pfungst, Clever Hans: (The Horse of Mr. Von Osten), (New York: Holt, Rinehart, and Winston, 1965), pp. 9-42.

⁴⁸O. Pfungst, Clever Hans (the Horse of Mr. Von Osten): A Contribution to Experimental, Animal, and Human Psychology (New York: Holt, Rinehart and Winston, 1911), p. 7-42.

and need amplification. It would be most desirable to translate the implications obtained from these animal studies into human behavioral applications. Much needs to be done to understand how similar expectations on the part of experimenters or teachers affect behavior.

VII. STUDIES OF HUMAN BEHAVIOR

Numerous studies have been made on expectancies and human behavior. Some are survey type studies which merely assess expectancies of various groups. Some match expectations of one group with another. Geller⁴⁹ studied the client expectations about counseling and counselor's perceptions of themselves as a counselor and found that client expectations were somewhat related to outcome of counseling but that counselor role perceptions were strongly related to both client and counselor evaluations of outcome. Miller's ⁵⁰ study was concerned with the nurse's perception and the patient's expectation. Many other studies have attempted to measure teacher expectations, pupil expectations, client expectations, and parent expectations. Some have dealt with the possible cause-effect relationships between the perceptions of

⁴⁹Marvin Herbert Geller, "Client Expectations, Counselor Role-Perception, and Outcome of Counseling" (unpublished Doctoral dissertation, University of California, Berkeley, 1965).

⁵⁰Stephen John Miller, "The Nurse's Perception and the Patient's Expectation of the Nursing Role--A Study of Patient Satisfaction With Care: (unpublished Doctoral dissertation, St. Louis University, 1963).

two groups. Although Hudson⁵¹ found some general agreement among student descriptions of the same teacher, it also appeared that different groups of students rated teachers on different criteria.

Probably the most convincing findings have occurred in the medical professions. The placebo effect has been noted in the medical and mental health professions for a long time. Shapiro⁵² concluded that the placebo effect has been in operation in the practice of medicine for many years. He pointed out that dangerous practices and useless medications have been used over the years but invariably the patient was helped. Credit can be given to the placebo effect of the treatment rather than the direct benefits of the treatment itself. Similar placebo effects have been found in the practice of counseling.⁵³

Sheard⁵⁴ noted that although modern medicines are far more effective, new drugs seem most efficacious when they are first developed and tend to lose some of their therapeutic value with the passage of time. He suspected that some of this is due to the physician's expectations and how it is communicated to the patient. Some of the messages

⁵¹Keith Calvin Hudson, "Pupil Expectations of Teacher Behavior as a Possible Influence Upon Pupil Ratings of Teacher Effectiveness" (unpublished Doctoral dissertation, The Florida State University, 1964).

⁵²Arthur K. Shapiro, "Factors Contributing to the Placebo Effect," American Journal of Psychotherapy, 18:73-88, 1964.

⁵³Rosenthal and Jacobson, op. cit., pp. 12-12.

⁵⁴Michael S. Sheard, "The Influence of Doctor's Attitude on the Patient's Response to Antidepressant Medication," Journal of Nervous and Mental Diseases, 136:555-560, 1963.

conveyed by the doctor might include a) real enthusiasm for a new drug as reflected in his voice, b) a less positive conviction as more careful research is conducted and findings show the drug not as effective as hoped, and c) possibly a tentative tone of voice in talking about the drug as he begins to be dubious.

Several important studies have been conducted by Beecher.⁵⁵ His study on the placebo on moderate levels of experimentally induced pain showed that morphine was no better than saline solution in a situation where neither physicians nor patients knew which ones were administered placebos. Beecher⁵⁶ also found that certain operations have a placebo effect. In a controlled experiment he discovered that an operation that was being conducted on patients with good results was actually a placebo. Certain patients in the study were merely given skin incisions and led to believe the operation was completed. These patients obtained similar relief from symptoms. Furthermore, it has been demonstrated that dryness of the mouth, nausea, sensations of heaviness, headache, difficulty in concentration, drowsiness, relaxation, a warm glow, fatigue, sleep, skin rashes, palpitation, and constriction of the pupils were some of the symptoms produced by pharmacologically inactive placebos.⁵⁷ Beecher seems to have effectively demonstrated the "drug

⁵⁵Henry Beecher, "Pain: One Mystery Solved," Science, 151:840-841, 1966.

⁵⁶Henry Beecher, "Surgery as Placebo," Journal of the American Medical Association, 176:1102-1107, 1961.

⁵⁷Henry Beecher, "The Powerful Placebo," Journal of the American Medical Association, 159:1602-1606, 1955.

effects" of non-drugs and the implications are intriguing. The use of placebos for treatments in educational settings have rarely been explored.

Loranger, Prout, and White⁵⁸ conducted an experiment in which an entire staff of a hospital was led to believe that a new tranquilizer and a new energizing drug were being introduced to hospital use. Actually, both new drugs were placebos, and only the hospital director and the experimenters knew this. The resulting staff assessments indicated that the drugs were found effective in patient treatment with about seventy per cent of the patients being helped at least a little.

In a study of the relationship of student and counselor expectations to rated counseling satisfaction Cundick⁵⁹ found that counselor satisfaction and client satisfaction were not significantly related. Cohen⁶⁰ reported that experimentally induced success led to increases in self evaluation while induced failure led to decrease in self evaluation. He felt that expectancy might have been a contributing factor but

⁵⁸A. W. Loranger, C. T. Prout, and Mary A. White, "The Placebo Effect in Psychiatric Drug Research," Journal of the American Medical Association, 176:920-925, 1961.

⁵⁹Bert Pierson Cundick, "The Relation of Student and Counselor Expectations to Rated Counseling Satisfaction" (unpublished Doctoral dissertation, The Ohio State University, 1962).

⁶⁰Alvin Irving Cohen, "Changes in Self Concept as a Function of Expectancy and Experimentally Induced Success, Failure and Neutral Conditions" (unpublished Doctoral dissertation, Southern Illinois University, 1960).

not a significant one. Goldstein⁶¹ found that the therapists' expectation was related to the duration of psychotherapy, but client-perceived personality change was not related to the therapist's expectancy. Frank⁶² attempted to measure congruence in patient and therapist expectancies. He concluded that in effect patients are given psychotherapy lessons. In other words, they learn what to expect and what is expected of them. These studies are perhaps representative of work in this area of human behavior and indicate that cause-effect relationships are suggested but have not been clearly established in many instances. Although the influence of self-fulfilling prophecies are not as obvious, there are indications that under controlled situations the expectancies of clients and therapists are major determinants of outcomes.

Another aspect of human behavior which seems to be influenced by expectations is athletic prowess. Jastrow⁶³ pointed out that contemplation of possible failure can hinder successes which are actually attainable. Many athletic feats which were once believed to be impossible have been accomplished and even surpassed. The four minute mile was formidable at one time, but a well accepted fact today. New records are being established in pole vaulting, swimming, and other

⁶¹Arnold P. Goldstein, Kenneth Heller, and Lee B. Sechrest, Psychotherapy and the Psychology of Behavior Change (New York: John Wiley & Sons, Inc., 1966), p.

⁶²Jerome D. Frank, "Discussion of Eysenck's 'The Effects of Psychotherapy'," International Journal of Psychiatry, 1:150-152, 1965.

⁶³Jastrow, op. cit., p. 301.

sports. Other studies have shown that athletes are greatly influenced by self expectancies and group expectancies.

Potentially the most meaningful type of human relationships occur between parent and child. Ginott⁶⁴ observed that when a child is called clumsy he may at first refuse the label but often the child believes the parent and comes to think of himself as clumsy. Likewise, a child who is told by parents that he is stupid comes to believe it. He gives up intellectual efforts in order to avoid failure. Teachers assume the role of parents in schools and can have a similar impact upon children. Dolce⁶⁵ stated that the ghetto child is a victim of his environment. He is psychologically, socially, and physically disadvantaged, and fails to achieve to middle class standards because of low expectations of teachers. According to Dolce these factors combine to reconstitute a form of self-fulfilling prophecy. Chall⁶⁶ mentioned the need for more information about the expectations teachers, schools, and communities have of reading achievement. Perhaps the psychological effects of teacher-pupil relationships are now receiving increased consideration.

VIII. EXPECTATIONS AND LEARNING

Earlier studies dealing with expectations in the field of

⁶⁴Haim Ginott, Between Parent and Child (New York: The MacMillan Company, 1965), p. 48.

⁶⁵Carl J. Dolce, "The Inner City--A Superintendent's View," Saturday Review, 52:36, January 11, 1969.

⁶⁶Jeanne Chall, loc. cit.

education tended to focus on descriptive studies which indicated what pupils, parents, or teachers expected of themselves or of others. There seemed to be less concern or awareness of the influences of the adult or authority figure upon the learner. More recently studies are examining the ways that people affect each other. It is now apparent that many relationships are occurring concurrently in an educational setting.⁶⁷ Certain positive types of relationships might be offset by negative ones and result in a lack of appropriate responses or a type of learning which is unanticipated. Some of the pertinent questions for educators center upon how realistic our expectations are, what can be done to change them, and how and in what ways they should be changed.⁶⁸ Even the matter of the ethics of modifying the value systems of socially different groups of people need to be examined more thoroughly.⁶⁹

Aronson and Carlsmith⁷⁰ concluded that if a person expects to perform poorly in a particular task, a good performance would be inconsistent with his expectancy, so he will attempt to reduce the dissonance by denying this performance.⁷¹ A further study by Aronson, Carlsmith, and

⁶⁷Kelly, Rogers, Maslow, and Combs, op. cit., pp. 93-98.

⁶⁸ibid., pp. 109-110.

⁶⁹Stella Chess, 'Opinion: Disadvantages of 'The Disadvantaged Child', "American Journal of Orthopsychiatry, 39:4-6, January, 1969.

⁷⁰Elliot Aronson and J. Merrill Carlsmith, "Performance Expectancy as a Determinant of Actual Performance," Journal of Abnormal and Social Psychology, 65:178-182, 1962.

Darley⁷¹ revealed that leading a person to form a strong expectancy of performing an unpleasant task will increase the probability of his choosing the unpleasant one over a more desirable one when offered a choice. Similar findings resulted from a replication of the Aronson and Carlsmith study which was conducted by Sampson and Sibley.⁷² In this case the subjects tended to judge a solution as sweeter when sweetness was the expected quality. These studies seem to imply that there is a relationship between performance and expectancy.

What has been reported previously concerning experimenter expectation in laboratory and social settings seems to have applicability to the educational setting. The evidence that has been presented appears to indicate that the experimenter or the teacher's expectations, overtly or covertly, are conveyed to the learner and leads him to form certain kinds of self-expectations. Deutsch⁷³ suggested that negative attitudes toward learning evolve in the schools⁷⁴. Becker⁷⁴ found that teachers and

⁷¹Elliot Aronson, J. Merrill Carlsmith, and John M. Darley, "The Effects of Expectancy on Volunteering for an Unpleasant Experience," Journal of Abnormal and Social Psychology, 66:220-224, 1963.

⁷²Edward E. Sampson and Linda B. Sibley, "A Further Examination of the Confirmation or Non-Confirmation of Expectancies and Desires," Journal of Personality and Social Psychology, 2:133-137, 1965.

⁷³Martin P. Deutsch, "The Disadvantaged Child and the Learning Process," in A. H. Passow (ed.), Education in Depressed Areas (New York: Bureau of Publications, Teachers College, Columbia University, 1963), p. 178.

⁷⁴Howard S. Becker, "Social Class Variations in the Teacher-Pupil Relationships," Journal of Educational Sociology, 25:451-465, April, 1952.

administrators in slum schools expect less from lower-class children, and he noted that the learning gap widened through the grades.^A Rosenthal and Jacobson examined many of the poverty programs and observed that the premises for these expensive, special programs "too rarely suggest that teacher attitudes and behavior might be contributing to pupil failure. And yet teacher reaction to lower-class children may well be intertwined inextricably in their lack of success."⁷⁵

Cromwell⁷⁶ reported that individuals are essentially "success striving" or "failure avoiding."⁷⁶ He concluded that people, including mentally retarded children, either choose to work for success with the subsequent rewards or try to avoid failure with its connotations of punishment. The expectancy of the person is colored by his prior experiences which in turn determine how a situation is perceived by the individual. Gardner⁷⁷ found that normal children tend to increase their efforts after a failure more frequently and to a greater degree than retarded children of the same mental age.^{no} This finding seems consistent with the work of Cromwell. Perhaps as the role of expectations becomes more clearly defined educators can become more successful in transmitting expectations which might positively affect the expectations of learners.*

⁷⁵Rosenthal and Jacobson, op. cit., p. 50.

⁷⁶Rue L. Cromwell, "Selected Aspects of Personality Development in Mentally Retarded Children," Exceptional Children, 28:44-51, 1961.

⁷⁷William I. Gardner, "Reactions of Intellectually Normal and Retarded Boys after Experimentally Induced Failure - A Social Learning Theory" (unpublished Doctoral dissertation, George Peabody College for Teachers, 1958).

IX. SUMMARY

Considerable interest has been generated in the potential applications of the self-fulfilling prophecy concept. Although no conclusive and irrefutable findings have been produced, much of the research seems to indicate that one person's expectations can significantly affect another's performance or attitudes. It would appear that this needs to be a basic assumption in counseling and psychotherapy. The applicability of this idea pervades all phases of education, social work, business, and the healing professions. In view of the interest in this concept and the implications it offers in the area of ^{community relations} human relations more effort must be made to understand how it works and under what conditions it works best.

CHAPTER III

EXPERIMENTAL DESIGN AND PROCEDURES

This study was designed to determine what differences, if any, would result in junior high school student achievement, intelligence measures, and attitudes under a variety of treatment conditions. The various treatments are presented in table form in this chapter (Figure 1). The dependent and independent variables will be stated with detailed procedures on the manipulation of these variables.

I. EXPERIMENTAL DESIGN

Subjects. The subjects making up the sample consisted of seventh grade pupils from a junior high school in an urban school district with approximately 32,000 students. Census data compiled by the school district Research Office indicated that 22.8 per cent of the pupils attending this school had Spanish surnames, 35.6 per cent were Negro, 33.3 per cent were white, 4.7 per cent were Orientals, and 3.6 per cent were listed as other non-whites.¹ Total enrollment for this school was 1,481 pupils in grades seven through nine. Additional population characteristics found in the 1960 Census Tracts² showed a median income

¹Revised Racial and Ethnic Report, Stockton Unified School District Research Office, December 2, 1964.

²U.S. Bureau of the Census, U.S. Censuses of Population and Housing: 1960 Census Tracts. Final Report PHC(1)-T53 (Washington: U.S. Government Printing Office, 1962).

of approximately \$3,800 for families and unrelated individuals residing in the ten tracts comprising the attendance area for the school. Approximately twenty-two per cent of the civilian force were unemployed. An estimated ten per cent of the families had incomes under \$1,000 and approximately twenty per cent of the families only had incomes between \$1,000 - \$1,999. School records indicate that many of the families were on welfare or employed in low paid manual labor. The school was one of several in the district that qualified for funds under Title I of the Elementary and Secondary Education Act of 1965 for compensatory education programs to provide massive aid in order to raise achievement levels and reduce the disadvantages inherent with poverty conditions.

Fifteen English teachers and arithmetic teachers were involved in this study. All English and arithmetic teachers of the sample students were included. Neither the teachers nor the pupils were informed of the actual nature and design of this experiment.

Methods of selecting subjects. Subjects were randomly selected from the seventh grade student population and randomly assigned to different experimental treatments by the use of a table of random numbers as suggested by Matheson.³ Any students who were earning all A's at the end of the first quarter were excluded, because improvement would be difficult to measure, and all students who were in special education classes for the educationally mentally retarded were also excluded from

³Matheson, Bruce, and Beauchamp, op. cit., pp. 24-25 and Appendix A.

consideration in the selection process because norms and programs would not be comparable to regular classes. A total of five mentally retarded students were eliminated and one straight "A" student was excluded.

Every English and arithmetic teacher of regular seventh grade students was automatically selected if he had one or more of the subjects in a class. Due to the random selection method every class of seventh grade English or arithmetic contained pupils who were included in the sample.

Design of experiment and assignment of subjects to various conditions. A 2 x 2 x 2 factorial design described in Kerlinger⁴ was used for this study. A more graphic portrayal of this design can be found in Figure 1. This design was selected because it allows for manipulation and control of two or more variables simultaneously and permits the study of the interactive effects of the independent variables on dependent variables.

The independent variables were:

1. Informing teachers
2. Informing pupils
3. Reinforcing either pupil and/or teacher

The dependent variables were:

1. Reading achievement scores
2. Arithmetic achievement scores

⁴Fred N. Kerlinger, Foundations of Behavioral Research (New York: Holt, Rinehart and Winston, Inc., 1964), pp. 227-9.

		Teachers			
		A ₁ (Informed)		A ₂ (Not informed)	
		C ₁ <u>Reinforced</u>	C ₂ <u>Not Reinforced</u>	C ₁ <u>Reinforced</u>	C ₂ <u>Not Reinforced</u>
Pupils	B ₁ (Informed)	A ₁ B ₁ C ₁	A ₁ B ₁ C ₂	A ₂ B ₁ C ₁	A ₂ B ₁ C ₂
	B ₂ (Not informed)	A ₁ B ₂ C ₁	A ₁ B ₂ C ₂	A ₂ B ₂ C ₁	A ₂ B ₂ C ₂

FIGURE 1
EXPERIMENTAL DESIGN

3. Intelligence quotients
4. Grades
5. Attendance
6. Teacher ratings of pupils on attitudes
7. Pupil self-rating of attitudes

The various combinations of the experimental treatment resulted in the following eight cells with 25 subjects assigned to each making a total sample of 200:

1. Teacher informed - $A_1B_2C_2$
2. Pupil informed - $A_2B_1C_2$
3. Teacher informed and pupil informed - $A_1B_1C_2$
4. Teacher informed and teacher reinforced - $A_1B_2C_1$
5. Pupil informed and pupil reinforced - $A_2B_1C_1$
6. Teacher informed and pupil informed, both teacher and pupil reinforced - A,B,C
7. Hawthorne control group - pupil and teacher contacts made during the third and fourth quarter without suggestions of higher potential for success - $A_2B_2C_1$
8. Control group - no special treatment - $A_2B_2C_2$

The use of this experimental design involved the testing of seven hypotheses for each dependent variable considered. The statistical treatment of the seven variables was handled in two stages. All of the variables generally considered to be related to school achievement were grouped as a unit. The other variables which were more in the nature of behavior and attitude measures were treated as another stage. Every

dependent variable was treated separately and then combined under factor analysis to produce additional factors the results of which were treated by analysis of variance. A total of thirteen separate analyses of variance were used in this study. The significance level of $p < .05$ was selected for all analyses of variance. Each separate analysis of variance consisted of the following:

Main effects:

1. Between teachers informed and teachers not informed
(A_1, A_2)
2. Between pupils informed and pupils not informed (B_1, B_2)
3. Between reinforcement and no reinforcement (C_1, C_2)

Interactions:

4. Interaction: A X B
Teachers informed and pupils informed
5. Interaction: A X C
Teachers informed and reinforcement
6. Interaction: B X C
Pupils informed and reinforcement
7. Interaction: A X B X C
Teachers informed and pupils informed and reinforcement

Measurement techniques. Instruments used for determining the effects of the independent variables upon each of the dependent variables including the following:

1. School grades - semester grades for each school subject during

the 1968-1969 school year. Letter grades were converted to a 4-3-2-1-0 system representing A-B-C-D-F.

2. Attendance - a count of the number of days of absence for the school year 1968-1969. Tabulation was made at the close of school in May, 1969.

3. Arithmetic achievement - Ernest W. Tiegs and Willie W. Clark, Survey of Arithmetic Achievement, Junior High Level, Form I, California Test Bureau, 1959.

4. Reading achievement - M. J. Nelson, The Nelson Reading Test, revised edition, grades 3-9, Form A, Houghton Mifflin Co., 1962.

5. IQ - John C. Flanagan, Tests of General Ability, Grades 6-9, Form A, Science Research Associates, 1959.

6. Teacher evaluation of pupils - a rating form employing a summative scale was designed (see Appendix A). This check list was given to teachers and completed in May, 1969. Each English teacher and arithmetic teacher filled a form for every student.

7. Pupil self-evaluation - an equivalent of the form presented to teachers for pupil ratings was used with pupils for self evaluation. This made possible a comparison between the two ratings. Some additional data were collected on the student questionnaire (see Appendix B).

II. EXPERIMENTAL PROCEDURES

An attempt was made to control this study by having all procedures performed by the experimenter wherever possible. Certain valid criticisms of other research studies were considered, and efforts were

made to avoid similar problems.

All of the counseling interviews with pupils were conducted by the researcher in order to maintain optimum uniformity in contacts. A daily log was maintained of pupil contacts, and notes from interviews were recorded. Teacher contacts were also done on an individual basis by the experimenter.

The informing stage of the experiment was carried out as described in chapter one. The steps of informing pupils of greater potential and demonstrating an interest in their school performance were repeated for each pupil in the study on an individual basis. Informing teachers of this higher expectation for the selected pupils was accomplished by conferences with each teacher on an individual basis. All of the informing of teachers and pupils was done at the beginning of the second quarter.

The selective reinforcement stage was conducted by similar individual interviews with pupils and teachers. The reinforcement followed the steps outlined in chapter one and generally consisted of reminding the pupils and teachers of the higher expectations. One reinforcement contact was made with each sample student during the middle of the third quarter, and another contact was made at the mid-point of the fourth quarter. Teacher reinforcement contacts were handled by discussing the progress of these selected pupils and reminding the teacher of the expectations for these pupils. Lists of names were used in the conferences to ensure that each pupil scheduled to be reinforced was discussed. Reinforcement of teachers occurred at the middle of the

third and fourth quarters. A timetable showing the sequence of these procedures is found in this chapter.

The testing program to assess the effects of the various treatments was conducted in May, 1969. Jensen's⁵ observation that Rosenthal and Jacobson committed a serious error in using teachers to administer the tests upon which their conclusions were based led the experimenter personally to administer all of the tests to the seventh grade students in the school. It was felt that the least amount of disruption to the school program would be encountered by testing pupils in their English, social studies, and arithmetic classes. The Tests of General Ability, the Nelson Reading Test, and the student attitude survey were administered the English and social studies classes which were two period blocks of time. Arithmetic classes were used to administer the Survey of Arithmetic Achievement. While the experimenter was administering the tests in each of the classes the teachers were able to complete their ratings of students.

The designation "sample students" refers to the two hundred subjects selected for this study. All other seventh grade pupils who were tested along with the sample were termed "non-sample students." Almost an equal number of sample and non-sample students were tested. In the testing no distinction was made between sample and non-sample students. Every pupil in the seventh grade had a set of pre-labeled, machine scoring answer cards, and all who were present during a class period

⁵Jensen, op. cit., p. 108.

were tested. This procedure required eighteen group administrations of each test or a total of seventy-two test administration sessions. (See Appendix C). Four make-up sessions also were held, but due to the high absentee rate several of the sample students were never present to be evaluated. The test data collected on the non-sample students were analyzed and used for comparative purposes in the next chapter.

The time schedule for carrying out various procedures in this experiment was as follows:

<u>Date(s)</u>	<u>Procedures</u>
September to October, 1968	Selection of sample and collection of preliminary data
November - December, 1968 - Between second and sixth week of second quarter	Inform pupils (done by re- searcher) Inform teachers (done by researcher)
February, 1969 - Middle of third quarter	Reinforce teachers (done by researcher) Reinforce pupils (done by researcher)
April, 1969 - Middle of fourth quarter	Reinforce teachers (done by researcher) Reinforce pupils (done by researcher)
May, 1969 Prior to end of school year	Pupil evaluation by teachers Pupil self-evaluations (done in classes) Achievement tests (administered by researcher) IQ test (administered by researcher)
June, 1969 After end of school year	Compile attendance data (done by researcher) Collect semester grades (done by researcher)

Reduction of the sources of error was an important consideration in conducting this experiment. Much publicity and discussion had been focused upon Rosenthal and Jacobson's Oak School study in South San Francisco. If teachers suspected a replication of this, their attitudes and reactions might have affected the results to be obtained. An attempt was made to present this study as a counseling project with pupils rather than a teacher-oriented study.

Another possible source of error was the halo effect of teacher grades. In other words, a higher grade might not represent higher achievement in certain cases. Other variables which were potential sources of error would include the test taking attitudes of pupils and the effects of natural causes such as a flu epidemic on school attendance. However, it was not likely that any of these factors were of real consequence. All possible efforts were made to minimize the effects of external variables.

Some of the control procedures incorporated in the study to minimize error variance include:

1. Limiting the knowledge about this experiment to a few people
2. Utilization of random selection procedures
3. Selection of an adequate experimental design
4. Establishment of uniformity in teacher and pupil interviews
5. Employment of adequate documentation of data and procedures
6. Utilization of data processing services for statistical computations

The statistical procedures recommended by Cooley and Lohnes⁶ for multivariate procedures for behavioral sciences were followed in this study. They involve principal components analysis with ones in the diagonals for total variance factoring followed by varimax rotation. Correlations were computed by the use of the Pearson product-moment correlation formula.

SUMMARY

This study was conducted during the 1968-1969 school year at a junior high school. A 2 x 2 x 2 factorial design was selected for this study. Two hundred randomly selected students were divided into eight groups of twenty-five pupils per group. Each group was randomly assigned to various treatments consisting of combinations of informing teachers, informing pupils, and reinforcing both. The data were treated with analyses of variance and factor analyses. The .05 level of significance was adopted for all analyses of variance.

⁶William W. Cooley and Paul R. Lohnes, Multivariate Procedures for the Behavioral Sciences, (New York: John Wiley & Sons, Inc., 1962), pp. 161-163.

CHAPTER IV

ANALYSIS OF RESULTS

Having subjected the data to various statistical treatments, the analyses of the results will be presented in this chapter. Subsequent chapters will contain discussion of these findings with conclusions and recommendations for further study.

Initially there were seven dependent variables which required seven separate analyses of variance. An eighth dependent variable was added because the grade point averages were computed for the first and second semesters. Additional analyses of variance were also conducted on general factors which were obtained through factor analysis. All other treatments are explained in detail in this chapter.

Following the presentation of some comparative data on the student population and the sample, the various dependent variables were studied by the use of a table of cell means and a table showing the results from each analysis of variance.

Table I shows the means of the sample and the non-sample students on six of the dependent variables. It can be seen that the randomly selected sample was representative of the seventh grade school population. The intelligence and achievement data were almost identical, and t tests of significance revealed no significant differences between the two major groups.

There were only a minimum of missing test data for each of the eight cells involved. Treatment groups of twenty-five pupils in each

cell were used at the beginning of the experiment giving a total sample of two hundred pupils. Five of the initial sampling of two hundred had left the school between the time the names were randomly drawn and the first teacher and pupil contacts were made in November. Additional names were substituted at that time to ensure a complete sample. The same procedures for random selection were applied in obtaining the replacement names. Only one hundred seventy-six of the sample students were still attending school when the study was completed in May. Due to dropouts, transfers to other schools, and irregular attendance post-test data were not obtainable for several of the subjects. The highest number of subjects that were successfully evaluated after treatment was twenty-two out of a possible twenty-five in any given cell. In a few instances the number of subjects in some cells fell below twenty. The cell means were used in place of these missing scores in order to maintain equal cell sizes, but the degrees of freedom were correspondingly reduced by the number of such substitutions. The variations in the degrees of freedom from variable to variable reflects the effect of this correction.

The seven null hypotheses for each dependent variable will be stated prior to the presentation of the pertinent data for that particular variable. Tables of Means similar to Table II have been prepared to indicate the scores obtained by each cell on the different dependent variables. The effects of the various treatments upon the eight groups can be readily observed in these tables. An Analysis of Variance Table for each variable also will follow the Table of Cell Means. This pattern will be consistently followed throughout the remainder of this chapter.

TABLE I
 MEANS FOR SAMPLE STUDENTS AND NON-SAMPLE STUDENTS
 ON SIX DEPENDENT VARIABLES
 BASED ON POST-TEST DATA

	N	Sample Means	S.D.	N	Non-Sample Means	S.D.	t	p
1. Intelligence Quotients (converted from Tests of General Ability raw scores)	165	87.23	16.84	185	86.99	17.44	0.139	n.s.
2. Survey of Arithmetic Achievement (raw scores)	157	24.10	10.47	196	24.17	10.41	-0.70	n.s.
3. The Nelson Reading Test (raw scores)	166	30.84	11.38	190	30.08	11.14	0.580	n.s.
4. Grade-point averages-Sem. I (based on 4-3-2-1-0 system)	165	2.12	---	---	Not computed	---	---	---
5. Grade-point averages-Sem. II (based on 4-3-2-1-0 system)	163	2.14	---	---	Not computed	---	---	---
6. Days of absence during 1968-1969 school year	173	13.89	---	---	Not computed	---	---	---

Dependent Variable #1: Intelligence quotients

Null hypothesis (1): There will be no significant differences in pupil intelligence quotients regardless of whether the teacher has been informed to expect a higher level of school performance for those pupils or not.

Null hypothesis (2): There will be no significant differences in pupil intelligence quotients regardless of whether the pupil has been informed to expect a higher level of school performance for himself or not.

Null hypothesis (3): There will be no significant differences in pupil intelligence quotients regardless of whether both the pupil and the teacher are reinforced to anticipate higher school performance or not.

Null hypothesis (4): There will be no significant differences in pupil intelligence quotients which might result from interaction effects between the informing of teachers and the informing of pupils.

Null hypothesis (5): There will be no significant differences in pupil intelligence quotients which might result from interaction effects between the informing of teachers and the reinforcing of teachers.

Null hypothesis (6): There will be no significant differences in pupil intelligence quotients which might result from interaction effects between the informing of pupils and the reinforcing of pupils.

Null hypothesis (7): There will be no significant differences in pupil intelligence quotients which might result from the interaction effects among (a) informing teachers, (b) informing pupils, and (c) reinforcing pupils and teachers.

The limited range and great similarity of the mean intelligence quotients for the eight treatment groups were evident in Table II. Only a seven point spread was found among the scores, and the deviations from the grand mean were even smaller. The analysis of variance on Table III indicated that none of the F values approached significance. Therefore, all of the seven null hypotheses for the dependent variable #1 involving intelligence quotients were accepted.

TABLE II
MEAN T.O.G.A.* IQ'S FOR THE EIGHT
TREATMENT GROUPS

	Teacher Informed		Teacher Not Informed	
	Reinforced	Not Reinforced	Reinforced	Not Reinforced
Pupil Informed	84.41	83.00	88.86	90.00
Pupil Not Informed	88.55	90.18	86.64	86.23
Grand Mean	87.23			
	N = 165			

* Tests of General Ability

TABLE III
FINAL ANALYSIS OF VARIANCE TABLE
FOR T.O.G.A. IQ'S*

Source	df	m.s.	F	p
Between Teacher Informed (A ₁ , A ₂)	1	85.96	.293	n.s.
Between Pupil Informed (B ₁ , B ₂)	1	77.78	.265	n.s.
Between Reinforced (C ₁ , C ₂)	1	2.51	.009	n.s.
Interaction: A x B	1	824.78	2.811	n.s.
Interaction: A x C	1	.69	.002	n.s.
Interaction: B x C	1	6.19	.021	n.s.
Interaction: A x B x C	1	57.96	.198	n.s.
Within Groups	157	293.39		
Total	164			

N = 165

*Converted from Tests of General Ability raw scores

Dependent Variable #2: Arithmetic achievement

Null hypothesis (1): There will be no significant differences in pupil arithmetic achievement regardless of whether the teacher has been informed to expect a higher level of school performance for those pupils or not.

Null hypothesis (2): There will be no significant differences in pupil arithmetic achievement regardless of whether the pupil has been informed to expect a higher level of school performance for himself or not.

Null hypothesis (3): There will be no significant differences in pupil arithmetic achievement regardless of whether both the pupil and the teacher are reinforced to anticipate higher school performance or not.

Null hypothesis (4): There will be no significant differences in pupil arithmetic achievement which might result from interaction effects between the informing of teachers and the informing of pupils.

Null hypothesis (5): There will be no significant differences in pupil arithmetic achievement which might result from interaction effects between the informing of teachers and the reinforcing of teachers.

Null hypothesis (6): There will be no significant differences in pupil arithmetic achievement which might result from interaction effects between the informing of pupils and the reinforcing of pupils.

Null hypothesis (7): There will be no significant differences in pupil arithmetic achievement which might result from the interaction effects among (a) informing teachers, (b) informing pupils, and (c) reinforcing pupils and teachers.

Some small differences were observed in Table IV showing the mean raw scores for each cell obtained on the survey of Arithmetic Achievement. It can be seen that the scores among the eight cells varied at most only one point from the grand mean of 24.1 which had a standard deviation of 10.5. The analysis of variance on Table V indicated that all of the F values were well below the significance level at .05. Therefore, all seven null hypotheses for the dependent variable #2 involving arithmetic achievement were not rejected.

TABLE IV
MEAN SURVEY OF ARITHMETIC ACHIEVEMENT RAW SCORES
FOR THE EIGHT TREATMENT GROUPS

	Teacher Informed		Teacher Not Informed	
	Reinforced	Not Reinforced	Reinforced	Not Reinforced
Pupil Informed	25.09	23.36	23.77	25.86
Pupil Not Informed	23.00	25.45	24.18	22.05
Grand Mean	24.10			
N =	157			

TABLE V
 FINAL ANALYSIS OF VARIANCE TABLE
 FOR SURVEY OF ARITHMETIC ACHIEVEMENT SCORES

Source	df	m.s.	F	p
Between Teacher Informed (A ₁ , A ₂)	1	3.00	.027	n.s.
Between Pupil Informed (B ₁ , B ₂)	1	31.96	.285	n.s.
Between Reinforced (C ₁ , C ₂)	1	1.28	.011	n.s.
Interaction: A x B	1	31.96	.285	n.s.
Interaction: A x C	1	1.64	.015	n.s.
Interaction: B x C	1	.006	.000	n.s.
Interaction: A x B x C	1	194.46	1.734	n.s.
Within Groups	149	112.13		
Total	156			
N = 157				

Dependent Variable #3: Reading achievement

Null hypothesis (1): There will be no significant differences in pupil reading achievement regardless of whether the teacher has been informed to expect a higher level of school performance for those pupils or not.

Null hypothesis (2): There will be no significant differences in pupil reading achievement regardless of whether the pupil has been informed to expect a higher level of school performance for himself or not.

Null hypothesis (3): There will be no significant differences in pupil reading achievement regardless of whether both the pupil and the teacher are reinforced to anticipate higher school performance or not.

Null hypothesis (4): There will be no significant differences in pupil reading achievement which might result from interaction effects between the informing of teachers and the informing of pupils.

Null hypothesis (5): There will be no significant differences in pupil reading achievement which might result from interaction effects between the informing of teachers and the reinforcing of teachers.

Null hypothesis (6): There will be no significant differences in pupil reading achievement which might result from interaction effects between the informing of pupils and the reinforcing of pupils.

Null hypothesis (7): There will be no significant differences in pupil reading achievement which might result from the interaction effects among (a) informing teachers, (b) informing pupils, and (c) reinforcing pupils and teachers.

Table VI shows that the mean for one cell varied almost three points from the grand mean, but most of the differences were small. Table I indicated that the grand mean of 30.8 based on raw scores on The Nelson Reading Test had a standard deviation of over eleven points. None of the group means were found to be significantly different. All of the F values in the analysis of variance on Table VII fell below the level of significance, so each of the seven null hypotheses for the dependent variable #3 involving reading achievement were not rejected.

TABLE VI
MEAN NELSON READING TEST RAW SCORES FOR
THE EIGHT TREATMENT GROUPS

	Teacher Informed		Teacher Not Informed	
	Reinforced	Not Reinforced	Reinforced	Not Reinforced
Pupil Informed	29.09	28.00	32.41	34.00
Pupil Not Informed	32.73	30.18	31.91	28.41
Grand Mean	30.84			
	N = 166			

TABLE VII
 FINAL ANALYSIS OF VARIANCE TABLE
 FOR THE NELSON READING TEST SCORES

Source	df	m.s.	F	p
Between Teacher Informed (A ₁ , A ₂)	1	124.45	.934	n.s.
Between Pupil Informed (B ₁ , B ₂)	1	.20	.002	n.s.
Between Reinforced (C ₁ , C ₂)	1	84.57	.635	n.s.
Interaction: A x B	1	390.02	2.926	n.s.
Interaction: A x C	1	8.20	.062	n.s.
Interaction: B x C	1	117.82	.884	n.s.
Interaction: A x B x C	1	36.36	.273	n.s.
Within Groups	158	133.28		
Total	165			

N = 165

Dependent Variable #4: First semester grades

Null hypothesis (1): There will be no significant differences in pupil first semester grades regardless of whether the teacher has been informed to expect a higher level of school performance for those pupils or not.

Null hypothesis (2): There will be no significant differences in pupil first semester grades regardless of whether the pupil has been informed to expect a higher level of school performance for himself or not.

Null hypothesis (3): There will be no significant differences in pupil first semester grades regardless of whether both the pupil and the teacher are reinforced to anticipate higher school performance or not.

Null hypothesis (4): There will be no significant differences in pupil first semester grades which might result from interaction effects between the informing of teachers and the informing of pupils.

Null hypothesis (5): There will be no significant differences in pupil first semester grades which might result from interaction effects between the informing of teachers and the reinforcing of teachers.

Null hypothesis (6): There will be no significant differences in pupil first semester grades which might result from interaction effects between the informing of pupils and the reinforcing of pupils

Null hypothesis (7): There will be no significant differences in pupil first semester grades which might result from the interaction effects among (a) informing teachers, (b) informing pupils, and (c) reinforcing pupils and teachers.

Some fractional differences in grade point averages were found in Table VIII which showed the means for each cell at the end of the first semester. On a zero to four system of counting grade points Table VIII indicated that "C" was an average grade for students at this school. The analysis of variance on Table IX indicated that the first semester grades did not differ significantly under the different treatments. Therefore, all seven null hypotheses for the dependent variable #4 involving first semester grades were not rejected.

TABLE VIII
MEAN SEMESTER I GRADE POINT AVERAGES FOR
THE EIGHT TREATMENT GROUPS

	Teacher Informed		Teacher Not Informed	
	Reinforced	Not Reinforced	Reinforced	Not Reinforced
Pupil Informed	2.18	2.17	2.20	2.08
Pupil Not Informed	2.03	2.04	2.29	1.94
Grand Mean	2.12			
	N = 165			

TABLE IX
 FINAL ANALYSIS OF VARIANCE TABLE
 FOR FIRST SEMESTER GRADE POINT AVERAGES

Source	df	m.s.	F	p
Between Teacher Informed (A ₁ , A ₂)	1	.02	.034	n.s.
Between Pupil Informed (B ₁ , B ₂)	1	.29	.500	n.s.
Between Reinforced (C ₁ , C ₂)	1	.66	1.138	n.s.
Interaction: A x B	1	.14	.241	n.s.
Interaction: A x C	1	.59	1.017	n.s.
Interaction: B x C	1	.11	.190	n.s.
Interaction: A x B x C	1	.17	.293	n.s.
Within Groups	157	.58		
Total	164			

N = 165

Dependent Variable #5: Second semester grades

Null hypothesis (1): There will be no significant differences in pupil second semester grades regardless of whether the teacher has been informed to expect a higher level of school performance for those pupils or not.

Null hypothesis (2): There will be no significant differences in pupil second semester grades regardless of whether the pupil has been informed to expect a higher level of school performance for himself or not.

Null hypothesis (3): There will be no significant differences in pupil second semester grades regardless of whether both the pupil and the teacher are reinforced to anticipate higher school performance or not.

Null hypothesis (4): There will be no significant differences in pupil second semester grades which might result from interaction effects between the informing of teachers and the informing of pupils.

Null hypothesis (5): There will be no significant differences in pupil second semester grades which might result from interaction effects between the informing of teachers and the reinforcing of teachers.

Null hypothesis (6): There will be no significant differences in pupil second semester grades which might result from interaction effects between the informing of pupils and the reinforcing of pupils.

Null hypothesis (7): There will be no significant differences in pupil second semester grades which might result from the interaction effects among (a) informing teachers, (b) informing pupils, and (c) reinforcing pupils and teachers.

A comparison of Table VIII and Table X indicated that the second semester grades were much like the first semester grades. There were no significant differences among the means and there was little deviation from the grand mean shown in either table. The F values from the analysis of variance for second semester grades were all below the level of significance. All seven of the null hypotheses for the dependent variable #5 involving second semester grades were not rejected.

TABLE X
MEAN SEMESTER II GRADE POINT AVERAGES
FOR THE EIGHT TREATMENT GROUPS

	Teacher Informed		Teacher Not Informed	
	Reinforced	Not Reinforced	Reinforced	Not Reinforced
Pupil Informed	2.25	2.19	2.26	2.18
Pupil Not Informed	2.07	2.05	2.13	2.02
Grand Mean	2.14			
N	163			

TABLE XI
 FINAL ANALYSIS OF VARIANCE TABLE
 FOR SEMESTER II GRADE POINT AVERAGES

Source	df	m. s.	F	p
Between Teacher Informed (A ₁ , A ₂)	1	.002	.003	n. s.
Between Pupil Informed (B ₁ , B ₂)	1	1.07	1.372	n. s.
Between Reinforced (C ₁ , C ₂)	1	.20	.256	n. s.
Interaction: A x B	1	.001	.013	n. s.
Interaction: A x C	1	.03	.038	n. s.
Interaction: B x C	1	.0004	.000	n. s.
Interaction: A x B x C	1	.0096	.013	n. s.
Within Groups	155	.78		
Total	162			

N = 163

Dependent Variable #6: Days of absence

Null hypothesis (1): There will be no significant differences in pupil days of absence regardless of whether the teacher has been informed to expect a higher level of school performance for those pupils or not.

Null hypothesis (2): There will be no significant differences in pupil days of absence regardless of whether the pupil has been informed to expect a higher level of school performance for himself or not.

Null hypothesis (3): There will be no significant differences in pupil days of absence regardless of whether both the pupil and the teacher are reinforced to anticipate higher school performance or not.

Null hypothesis (4): There will be no significant differences in pupil days of absence which might result from interaction effects between the informing of teachers and the informing of pupils.

Null hypothesis (5): There will be no significant differences in pupil days of absence which might result from interaction effects between the informing of teachers and the reinforcing of teachers.

Null hypothesis (6): There will be no significant differences in pupil days of absence which might result from interaction effects between the informing of pupils and the reinforcing of pupils.

Null hypothesis (7): There will be no significant differences in pupil days of absence which might result from the interaction effects among (a) informing teachers, (b) informing pupils, and (c) reinforcing pupils and teachers.

A noticeable difference among the cells in the number of days of absence was revealed in Table XII. In the Analysis of Variance Table XIII, two F values above the level required for significance were noted. There was a significant main effect between the conditions of teacher informed and teacher not informed. The teacher informed group showed significantly fewer days of absence than the teacher not informed group. Another significant main effect was found between reinforcement and no reinforcement. The reinforced group showed significantly fewer days of absence than the unreinforced group. For the Dependent Variable #6 involving days of absence null hypothesis #1 predicting no significant differences between teacher informed and teacher not informed and null hypothesis #3 predicting no significant differences between teacher and pupil reinforcement and no reinforcement were rejected. All of the remaining five null hypotheses were accepted.

TABLE XII

MEAN NUMBER OF ABSENCES DURING SCHOOL YEAR 1968-69
FOR THE EIGHT TREATMENT GROUPS

	Teacher Informed		Teacher Not Informed	
	Reinforced	Not Reinforced	Reinforced	Not Reinforced
Pupil Informed	6.50	9.27	15.50	16.91
Pupil Not Informed	12.86	16.64	11.36	22.09

Grand Mean 13.89

N = 173

TABLE XIII
 FINAL ANALYSIS OF VARIANCE TABLE
 FOR NUMBER OF ABSENCES DURING SCHOOL YEAR 1968-1969

Source	df	m.s.	F	p
Between Teacher Informed (A ₁ , A ₂)	1	1165.96	5.746	*
Between Pupil Informed (B ₁ , B ₂)	1	600.14	2.958	n.s.
Between Reinforced (C ₁ , C ₂)	1	959.78	4.730	*
Interaction: A x B	1	442.28	2.180	n.s.
Interaction: A x C	1	85.96	.424	n.s.
Interaction: B x C	1	292.78	1.443	n.s.
Interaction: A x B x C	1	190.28	.938	n.s.
Within Groups	165	202.90		
Total	172			

N = 173

* $p < .05$

The correlational matrix in Table XIV indicated a high positive correlation between first semester grades and second semester grades. Positive correlation were also noted between grades and achievement, achievement and intelligence, and reading and arithmetic. As might be expected, negative correlations were shown between attendance and grades and between attendance and achievement.

After studying the effects of the dependent variables; 1) intelligence quotients, 2) arithmetic achievement, 3) reading achievement, 4) first semester grades, 5) second semester grades and 6) days of absence, separately, a factor analysis using these six achievement variables resulted in two factors with eigenvalues of greater than 1.0. These were retained and subjected to varimax rotation. Table XV shows that these two factors accounted for 76.8% of the variance after rotation. The factor loadings indicated that the first factor loaded high on I.Q. and achievement, but the second factor loaded high on attendance. Consequently, factor I was labeled school ability. The second factor was labeled school behavior. The factor scores obtained from factor analysis were subsequently used as dependent measures in a parametric three way analysis of variance. General factor I was identified as dependent variable #7, school ability, and general factor II was identified as dependent variable #8, school behavior, for presentation in this chapter.

By pooling the reinforcement conditions and pooling the means as shown in Table XVI the significant interaction between the teacher informed and pupil informed conditions was better illustrated. Figure 2 portrays this interaction graphically. The individual cell means are shown in

TABLE XIV
CORRELATIONAL MATRIX FOR THE SIX ACHIEVEMENT VARIABLES

	Grade-point Averages Semester I	Grade-point Averages Semester II	Days of Absence	Intelligence Quotients on Tests of General Ability	Survey of Arithmetic Achievement	The Nelson Reading Test
1. Grade-point Averages Semester I	1.000	.881	-.535	.359	.595	.484
2. Grade-point Averages Semester II	.881	1.000	-.486	.360	.553	.505
3. Days of Absence	-.535	-.486	1.000	-.137	-.233	-.241
4. Intelligence Quotients on Tests of General Ability	.359	.360	-.137	1.000	.656	.559
5. Survey of Arithmetic Achievement	.595	.553	-.233	.656	1.000	.596
6. The Nelson Reading Test	.484	.505	-.241	.559	.596	1.000

TABLE XV

TWO FACTORS ACCOUNTING FOR 76.8% OF THE VARIANCE
FROM THE SIX ACHIEVEMENT VARIABLES

	First Factor ¹	Second Factor ²
Eigenvalues	3.458	1.149
% of Variance	.576	.192
% of Variance	.400	.368
After Rotation		
FACTORS	FACTOR LOADINGS FOR VARIMAX ROTATION	
1. Grade-point averages Semester I	.412	-.833
2. Grade-point averages Semester II	.418	-.807
3. Days of absence	.027	.835
4. Intelligence Quotients on Tests of General Ability	.898	-.036
5. Survey of Arithmetic Achievement	.827	-.305
6. The Nelson Reading Test	.772	-.269

¹General School Ability

²General School Behavior

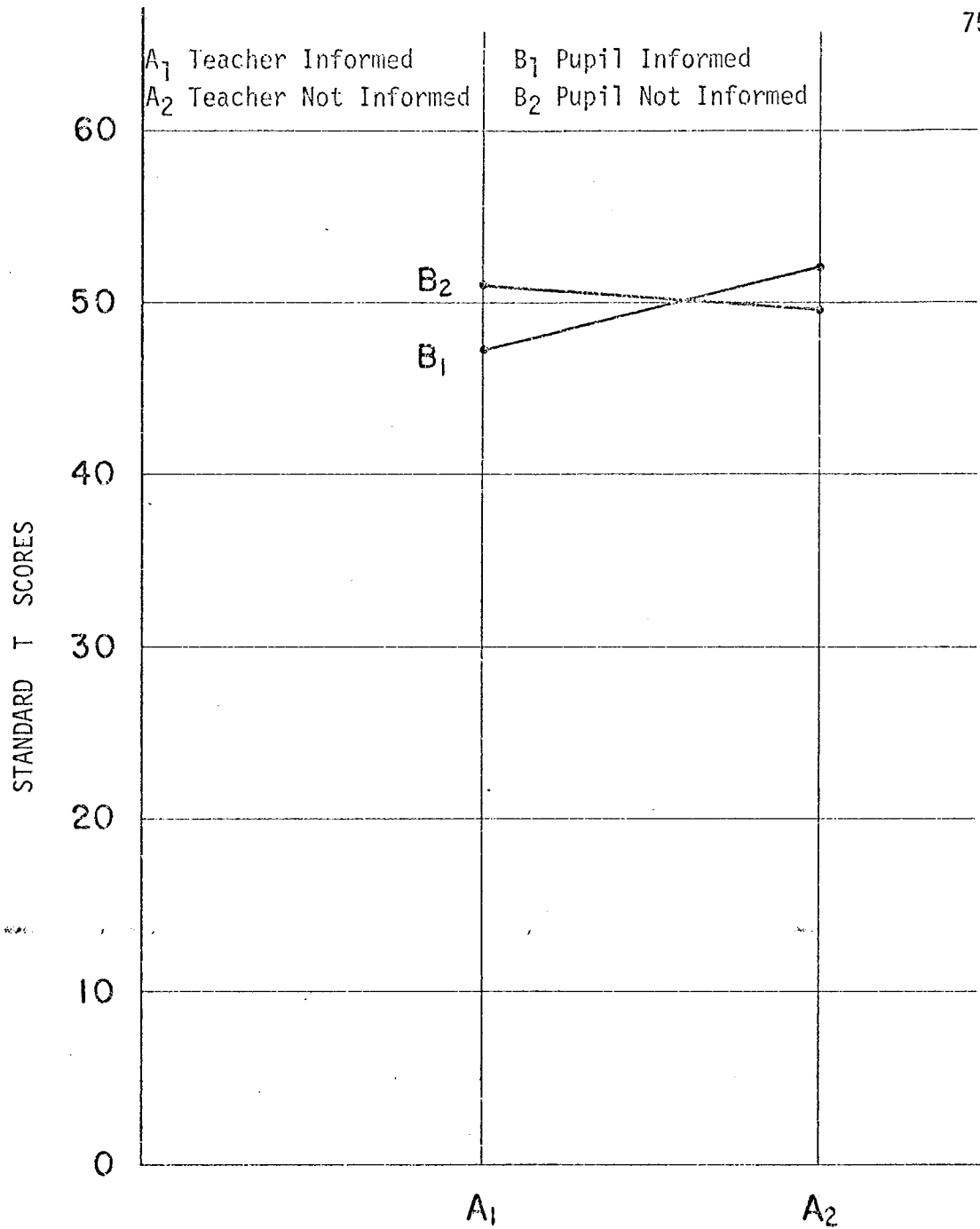


FIGURE 2
INTERACTION BETWEEN TEACHER INFORMED AND
PUPIL INFORMED GROUPS ON FACTOR I:
GENERAL SCHOOL ABILITY

TABLE XVI
 MEAN SCORES ON FACTOR I: GENERAL SCHOOL ABILITY
 FOR THE FOUR TREATMENT GROUPS FORMED
 BY POOLING THE REINFORCEMENT
 CONDITIONS

	TEACHER INFORMED	TEACHER NOT INFORMED
PUPIL INFORMED	47.23	52.07
PUPIL NOT INFORMED	51.04	49.68

Table XVII. The analysis of variance for the general school ability factor shown in Table XVIII indicated a significant F for the interaction effect between conditions A (teacher informed) and B (pupil informed). Because the mean square for teacher informed and pupil informed was significant it might be suggested that the teacher informed effect was not independent of the pupil informed condition. When the teacher was informed, but the pupil was not, higher scores resulted. Similarly, when the pupil was informed, but the teacher was not, higher scores also resulted. When both teacher and pupil were informed or when neither was informed the scores were lower. On the basis of these data null hypothesis #4 which predicted no significance between teacher informed and pupil informed for dependent variable #7 involving general school ability was rejected. The remaining six null hypotheses were not rejected.

TABLE XVII
 MEANS FOR FACTOR I: GENERAL SCHOOL ABILITY*
 FOR THE EIGHT TREATMENT GROUPS

	Teacher Informed		Teacher Not Informed	
	Reinforced	Not Reinforced	Reinforced	Not Reinforced
Pupil Informed	47.68	46.77	51.12	53.01
Pupil Not Informed	50.40	51.67	49.72	49.64
Grand Mean	50.00			
	N = 176			

*Derived from factor analysis
 of six achievement variables

Two attitude survey forms were used. One was designed for the students (Appendix A) and the other was for teachers (Appendix B). Six responses were completed by the arithmetic teacher, six responses were completed by the basic teacher, and twelve responses were made by the pupils. Means and standard deviations for the teacher and pupil responses are found in Appendix D. The correlational matrix for these responses are shown in Appendix E. Using factor analysis the twenty-four variables of the attitude surveys were reduced to five factors accounting for 58.8 percent of the variance. The factor loading patterns after varimax rotation will be presented in tabular form.

Dependent Variable #7: General school ability

Null hypothesis (1): There will be no significant difference in pupil general school ability regardless of whether the teacher has been informed to expect a higher level of school performance for those pupils or not.

Null hypothesis (2): There will be no significant differences in pupil general school ability regardless of whether the pupil has been informed to expect a higher level of school performance for himself or not.

Null hypothesis (3): There will be no significant differences in pupil general school ability regardless of whether both the pupil and the teacher are reinforced to anticipate higher school performance or not.

Null hypothesis (4): There will be no significant differences in pupil general school ability which might result from interaction effects between the informing of teachers and the informing of pupils.

Null hypothesis (5): There will be no significant differences in pupil general school ability which might result from interaction effects between the informing of teachers and the reinforcing of teachers.

Null hypothesis (6): There will be no significant differences in pupil general school ability which might result from interaction effects between the informing of pupils and the reinforcing of pupils.

Null hypothesis (7): There will be no significant differences in pupil general school ability which might result from the interaction effects among (a) informing teachers, (b) informing pupils, and (c) reinforcing pupils and teachers.

TABLE XVIII
 FINAL ANALYSIS OF VARIANCE TABLE
 FOR FACTOR I: GENERAL SCHOOL ABILITY

Source	df	m.s.	F	p
Between Teacher Informed (A ₁ , A ₂)	1	134.01	1.328	n.s.
Between Pupil Informed (B ₁ , B ₂)	1	22.30	.221	n.s.
Between Reinforced (C ₁ , C ₂)	1	12.94	.128	n.s.
Interaction: A x B	1	421.65	4.178	*
Interaction: A x C	1	5.90	.058	n.s.
Interaction: B x C	1	.12	.001	n.s.
Interaction: A x B x C	1	47.56	.471	n.s.
Within Groups	168	100.93		

Total

175

N = 176

*p < .05

Dependent Variable #8: General school behavior

Null hypothesis (1): There will be no significant differences in pupil general school behavior regardless of whether the teacher has been informed to expect a higher level of school performance for those pupils or not.

Null hypothesis (2): There will be no significant differences in pupil general school behavior regardless of whether the pupil has been informed to expect a higher level of school performance for himself or not.

Null hypothesis (3): There will be no significant differences in pupil general school behavior regardless of whether both the pupil and the teacher are reinforced to anticipate higher school performance or not.

Null hypothesis (4): There will be no significant differences in pupil general school behavior which might result from interaction effects between the informing of teachers and the informing of pupils.

Null hypothesis (5): There will be no significant differences in pupil general school behavior which might result from interaction effects between the informing of teachers and the reinforcing of teachers.

Null hypothesis (6): There will be no significant differences in pupil general school behavior which might result from interaction effects between the informing of pupils and the reinforcing of pupils.

Null hypothesis (7): There will be no significant differences in pupil general school behavior which might result from the interaction effects among (a) informing teachers, (b) informing pupils, and (c) reinforcing pupils and teachers.

Some variations in scores among the eight cells were observed in Table XIX but none of the differences approached significance. Table XX indicated that none of the F values obtained from the analysis of variance were significant. Therefore, all seven null hypotheses for variable #8 dealing with general school behavior were not rejected.

TABLE XIX
MEANS FOR FACTOR II: GENERAL SCHOOL BEHAVIOR*
FOR THE EIGHT TREATMENT GROUPS

	Teacher Informed		Teacher Not Informed	
	Reinforced	Not Reinforced	Reinforced	Not Reinforced
Pupil Informed	46.14	47.11	49.88	51.77
Pupil Not Informed	50.62	52.25	48.25	53.98
Grand Mean	50.00			
	N = 176			

* Derived from factor analysis of six achievement variables.

TABLE XX
 FINAL ANALYSIS OF VARIANCE TABLE
 FOR FACTOR II: GENERAL SCHOOL BEHAVIOR

Source	df	m. s.	F	p
Between Teacher Informed (A ₁ , A ₂)	1	165.06	1.682	n. s.
Between Pupil Informed (B ₁ , B ₂)	1	285.90	2.913	n. s.
Between Reinforced (C ₁ , C ₂)	1	286.29	2.917	n. s.
Interaction: A x B	1	224.21	2.285	n. s.
Interaction: A x C	1	69.40	.707	n. s.
Interaction: B x C	1	55.49	.565	n. s.
Interaction: A x B x C	1	27.82	.284	n. s.
Within Groups	168	98.13		

Total 175

N = 176

The five factors identified by factor analysis of the attitude surveys were:

- Factor 1: dependent variable #9 dealing with arithmetic teacher ratings of the sample students
- Factor 2: dependent variable #10 dealing with basic teacher ratings of the sample students
- Factor 3: dependent variable #11 dealing with pupil self-ratings on effort
- Factor 4: dependent variable #12 dealing with pupil self-ratings on potential
- Factor 5: dependent variable #13 dealing with pupil self-ratings on social conformity

An examination of Table XXI, indicates that Factor 1 dealing with arithmetic teacher ratings of the sample students produced the largest variance. Factor 2 dealing with basic teacher ratings of the sample students accounted for the second largest variance. The remaining three factors dealing with pupil self-ratings on effort, pupil self-ratings on potential, and pupil self-ratings on social conformity contributed a small portion of the variance obtained from the attitude surveys.

The same statistical procedures were used in treating the five factors obtained from the factor analysis. A table showing the mean scores for each of the eight treatment groups is presented. These are followed by an analysis of variance table for each of the five variables which resulted from the attitude surveys.

TABLE XXI

FIVE FACTORS ACCOUNTING FOR APPROXIMATELY 58.8% OF THE VARIANCE
FROM THE TEACHER AND PUPIL SURVEY RESPONSES

Factors	1	2	3	4	5	
Eigenvalues	7.795	2.088	1.821	1.295	1.176	
% of Variance	.325	.087	.076	.054	.049	
% of Variance After	.201	.155	.098	.070	.064	
Rotation	<u>FACTOR PATTERN</u>					
FACTORS						
VARIABLES						
PUPIL RESPONSES	1.	.118	.166	.776	.031	.162
	2.	.016	.143	.212	-.083	.521
	3.	.036	.015	.089	.528	.564
	4.	.238	.108	-.022	.076	.665
	5.	.050	.030	-.055	.745	.111
	6.	.049	.393	.418	.347	.116
	7.	.066	-.500	.208	.076	-.238
	8.	.067	.178	-.077	.101	.017
	9.	-.145	-.533	-.572	-.028	.122
	10.	-.461	-.141	-.476	-.103	-.019
BASIC TEACHER RESPONSES	11.	.126	-.064	.549	.146	.529
	12.	.125	.073	.216	.745	-.056
	13.	.310	.629	.324	.127	-.135
	14.	.276	.755	.119	.013	.044
	15.	.353	.754	.196	.112	.017
	16.	.376	.777	.083	.001	.199
	17.	-.110	.241	.013	.096	.075
	18.	.359	.676	.282	.136	-.034
	19.	.783	.188	.327	.113	.020
	20.	.861	.124	-.007	.047	.112
ARITHMETIC TEACHER RESPONSES	21.	.839	.219	.007	.167	.027
	22.	.767	.200	-.147	-.053	.142
	23.	.810	.243	.284	.038	.019
	24.	.772	.229	.328	.009	.043

Factors: 1-Arithmetic teacher responses, 2-Basic teacher responses,
3-Pupil responses on effort, 4-Pupil responses on potential,
5-Pupil responses on social functioning.

Dependent Variable #9: Ratings by arithmetic teachers

Null hypothesis (1): There will be no significant difference in pupil ratings by arithmetic teachers regardless of whether the teacher has been informed to expect a higher level of school performance for those pupils or not.

Null hypothesis (2): There will be no significant differences in pupil ratings by arithmetic teachers regardless of whether the pupil has been informed to expect a higher level of school performance for himself or not.

Null hypothesis (3): There will be no significant differences in pupil ratings by arithmetic teachers regardless of whether the pupil and the teacher are reinforced to anticipate higher school performance or not.

Null hypothesis (4): There will be no significant differences in pupil ratings by arithmetic teachers which might result from interaction effects between the informing of teachers and the informing of pupils.

Null hypothesis (5): There will be no significant differences in pupil ratings by arithmetic teachers which might result from interaction effects between the informing of teachers and the reinforcing of teachers.

Null hypothesis (6): There will be no significant differences in pupil ratings by arithmetic teachers which might result from interaction effects between the informing of pupils and the reinforcing of pupils.

Null hypothesis (7): There will be no significant differences in pupil ratings by arithmetic teachers which might result from the interaction effects among (a) informing teachers, (b) informing pupils, and (c) reinforcing pupils and teachers.

The mean for each treatment group based on the arithmetic teacher ratings of pupils were compared in Table XXII. There was little fluctuation above or below the general mean of 50.0. Table XXIII indicated that the analysis of variance resulted in no F values that were significant, so none of the seven null hypotheses were rejected for dependent variable #9 dealing with arithmetic teacher ratings.

TABLE XXII
MEANS FOR ARITHMETIC TEACHERS'
RATINGS OF PUPILS

	Teacher Informed		Teacher Not Informed	
	Reinforced	Not Reinforced	Reinforced	Not Reinforced
Pupil Informed	48.47	49.04	49.86	50.95
Pupil Not Informed	47.62	51.64	48.84	53.59
Grand Mean	50.00			
N =	176			

TABLE XXIII
 FINAL ANALYSIS OF VARIANCE TABLE
 FOR ARITHMETIC TEACHERS' RATINGS OF PUPILS

Source	df	m.s.	F	p
Between Teacher Informed (A ₁ , A ₂)	1	115.39	1.139	n.s.
Between Pupil Informed (B ₁ , B ₂)	1	31.17	.308	n.s.
Between Reinforced (C ₁ , C ₂)	1	299.50	2.957	n.s.
Interaction: A x B	1	.04	.000	n.s.
Interaction: A x C	1	4.28	.042	n.s.
Interaction: B x C	1	138.93	1.372	n.s.
Interaction: A x B x C	1	.14	.001	n.s.
Within Groups	168	101.29		

Total 175

N = 176

Dependent Variable #10: Ratings by Basic Teachers

Null hypothesis (1): There will be no significant differences in pupil ratings by basic teachers regardless of whether the teacher has been informed to expect a higher level of school performance for those pupils or not.

Null hypothesis (2): There will be no significant differences in pupil ratings by basic teachers regardless of whether the pupil has been informed to expect a higher level of school performance for himself or not.

Null hypothesis (3): There will be no significant differences in pupil ratings by basic teachers regardless of whether both the pupil and the teacher are reinforced to anticipate higher school performance or not.

Null hypothesis (4): There will be no significant differences in pupil ratings by basic teachers which might result from interaction effects between the informing of teachers and the informing of pupils.

Null hypothesis (5): There will be no significant differences in pupil ratings by basic teachers which might result from interaction effects between the informing of teachers and the reinforcing of the teachers.

Null hypothesis (6): There will be no significant differences in pupil ratings by basic teachers which might result from interaction effects between the informing of pupils and the reinforcing of pupils.

Null hypothesis (7): There will be no significant differences in pupil ratings by basic teachers which might result from the interaction effects among (a) informing teachers, (b) informing pupils, and (c) reinforcing pupils and teachers.

Table XXIV indicated that the eight cell means based on basic teacher ratings of the pupils were almost identical to the grand mean of 50.0. As might be expected, the analysis of variance shown on Table XXV revealed that all of the F values were not significant. Consequently, seven null hypotheses for the dependent variable dealing with basic teacher ratings were not rejected.

TABLE XXIV
MEANS FOR BASIC TEACHERS' RATINGS OF PUPILS

	Teacher Informed		Teacher Not Informed	
	Reinforced	Not Reinforced	Reinforced	Not Reinforced
Pupil Informed	50.60	49.46	49.84	50.71
Pupil Not Informed	50.92	47.73	50.75	50.00
Grand Mean	50.00			
N = 176				

TABLE XXV
 FINAL ANALYSIS OF VARIANCE TABLE
 FOR BASIC TEACHERS' RATINGS OF PUPILS

Source	df	m.s.	F	p
Between Teacher Informed (A ₁ , A ₂)	1	18.28	.177	n.s.
Between Pupil Informed (B ₁ , B ₂)	1	4.11	.040	n.s.
Between Reinforced (C ₁ , C ₂)	1	48.87	.473	n.s.
Interaction: A x B	1	7.11	.069	n.s.
Interaction: A x C	1	54.19	.525	n.s.
Interaction: B x C	1	37.04	.359	n.s.
Interaction: A x B x C	1	.48	.005	n.s.
Within Groups	168	103.24		
Total	174			

N = 175

Dependent Variable #11: Pupil self-ratings on effort

Null hypothesis (1): There will be no significant differences in pupil self-ratings on effort regardless of whether the teacher has been informed to expect a higher level of school performance for those pupils or not.

Null hypothesis (2): There will be no significant differences in pupil self-ratings on effort regardless of whether the pupil has been informed to expect a higher level of school performance for himself or not.

Null hypothesis (3): There will be no significant differences in pupil self-ratings on effort regardless of whether both the pupil and the teacher are reinforced to anticipate higher school performance or not.

Null hypothesis (4): There will be no significant differences in pupil self-ratings on effort which might result from interaction effects between the informing of teachers and the informing of pupils.

Null hypothesis (5): There will be no significant differences in pupil self-ratings on effort which might result from interaction effects between the informing of teachers and the reinforcing of teachers.

Null hypothesis (6): There will be no significant differences in pupil self-ratings on effort which might result from interaction effects between the informing of pupils and the reinforcing of pupils.

Null hypothesis (7): There will be no significant differences in pupil self-ratings on effort which might result from the interaction effects among (a) informing teachers, (b) informing pupils, and (c) reinforcing pupils and teachers.

Only minor differences were noticed among the cells in Table XXVI. These variables consisted of the responses pupils made in rating themselves on school effort (Question #11 in the student survey). The analysis of variance Table XXVII for the dependent variable #11 dealing with pupil self-ratings on school effort revealed no significant F values. Therefore all seven null hypotheses were not rejected.

TABLE XXVI
MEANS FOR PUPIL SELF-RATINGS ON EFFORT

	Teacher Informed		Teacher Not Informed	
	Reinforced	Not Reinforced	Reinforced	Not Reinforced
Pupil Informed	47.32	50.90	50.78	48.67
Pupil Not Informed	49.66	48.68	53.45	50.54

Grand Mean 50.00

N - 176

TABLE XXVII
 FINAL ANALYSIS OF VARIANCE TABLE
 FOR PUPIL SELF-RATINGS ON EFFORT

Source	df	m.s.	F	p
Between Teacher Informed (A ₁ , A ₂)	1	129.90	1.288	n.s.
Between Pupil Informed (B ₁ , B ₂)	1	59.63	.591	n.s.
Between Reinforced (C ₁ , C ₂)	1	16.13	.160	n.s.
Interaction: A x B	1	53.61	.532	n.s.
Interaction: A x C	1	159.37	1.581	n.s.
Interaction: B x C	1	78.99	.783	n.s.
Interaction: A x B x C	1	38.66	.383	n.s.
Within Groups	168	100.83		

Total

175

N = 176

Dependent Variable #12: Pupil self-ratings on potential

Null hypothesis (1): There will be no significant differences in pupil self-ratings on potential regardless of whether the teacher has been informed to expect a higher level of school performance for those pupils or not.

Null hypothesis (2): There will be no significant differences in pupil self-ratings on potential regardless of whether the pupil has been informed to expect a higher level of school performance for himself or not.

Null hypothesis (3): There will be no significant differences in pupil self-ratings on potential regardless of whether both the pupil and the teacher are reinforced to anticipate higher school performance or not.

Null hypothesis (4): There will be no significant differences in pupil self-ratings on potential which might result from interaction effects between the informing of teachers and the informing of pupils.

Null hypothesis (5): There will be no significant differences in pupil self-ratings on potential which might result from interaction effects between the informing of teachers and the reinforcing of the same teachers.

Null hypothesis (6): There will be no significant differences in pupil self-ratings on potential which might result from interaction effects between the informing of pupils and the reinforcing of pupils.

Null hypothesis (7): There will be no significant differences in pupil self-ratings on potential which might result from the interaction effects among (a) informing teachers, (b) informing pupils, and (c) reinforcing pupils and teachers.

The pupil self-ratings on potential consisted of responses to student survey form question #6 which asked them to rate themselves on self-perceived potential. No apparent differences were observed in Table XXVIII and the analysis of variance Table XXIX indicated that no significant differences were found. Consequently, all seven null hypotheses for the dependent variable #12 dealing with pupil self-ratings on potential were not rejected.

TABLE XXVIII
CELL MEANS FOR PUPIL SELF-RATINGS ON POTENTIAL

	Teacher Informed		Teacher Not Informed	
	Reinforced	Not Reinforced	Reinforced	Not Reinforced
Pupil Informed	47.67	48.61	51.13	50.27
Pupil Not Informed	50.30	49.48	51.24	51.31
Grand Mean	50.00			
	N = 176			

TABLE XXIX
 FINAL ANALYSIS OF VARIANCE TABLE
 FOR PUPIL SELF-RATINGS ON POTENTIAL

Source	df	m.s.	F	p
Between Teacher Informed (A ₁ , A ₂)	1	171.57	1.675	n.s.
Between Pupil Informed (B ₁ , B ₂)	1	59.14	.578	n.s.
Between Reinforced (C ₁ , C ₂)	1	1.22	.012	n.s.
Interaction: A x B	1	15.22	.149	n.s.
Interaction: A x C	1	2.21	.022	n.s.
Interaction: B x C	1	1.85	.018	n.s.
Interaction: A x B x C	1	19.83	.194	n.s.
Within Groups	168	102.40		

Total 175

N - 176

Dependent Variable #13: Pupil self-ratings on social functioning

Null hypothesis (1): There will be no significant differences in pupil self-ratings on social functioning regardless of whether the teacher has been informed to expect a higher level of school performance for those pupils or not.

Null hypothesis (2): There will be no significant differences in pupil self-ratings on social functioning regardless of whether the pupil has been informed to expect a higher level of school performance or not.

Null hypothesis (3): There will be no significant differences in pupil self-ratings on social functioning regardless of whether both pupil and teacher are reinforced to anticipate higher school performance or not.

Null hypothesis (4): There will be no significant differences in pupil self-ratings on social functioning which might result from interaction effects between the informing of teachers and the informing of pupils.

Null hypothesis (5): There will be no significant differences in pupil self-ratings on social functioning which might result from interaction effects between the informing of teachers and the reinforcing of teachers.

Null hypothesis (6): There will be no significant differences in pupil self-ratings on social functioning which might result from interaction effects between the informing of pupils and the reinforcing of pupils.

Null hypothesis (7): There will be no significant differences in pupil self-ratings on social functioning which might result from the interaction effects among (a) informing teachers, (b) informing pupils, and (c) reinforcing pupils and teachers.

The pupils' responses to the questions on social functioning showed a fairly uniform pattern for all cells in Table XXX, and the analysis of variance Table XXXI indicated no significant F values. Therefore, all seven null hypotheses for variable #13 dealing with pupil self-ratings on social functioning were not rejected.

TABLE XXX
MEANS FOR PUPIL SELF-RATINGS
ON SOCIAL FUNCTIONING

	Teacher Informed		Teacher Not Informed	
	Reinforced	Not Reinforced	Reinforced	Not Reinforced
Pupil Informed	51.11	48.09	46.61	51.44
Pupil Not Informed	50.75	50.05	49.37	50.44
Grand Mean	49.73			
N =	176			

TABLE XXXI
 FINAL ANALYSIS OF VARIANCE TABLE
 FOR PUPIL SELF-RATINGS ON SOCIAL FUNCTIONING

Source	df	m.s.	F	p
Between Teacher Informed (A ₁ , A ₂)	1	12.64	.108	n.s.
Between Pupil Informed (B ₁ , B ₂)	1	31.22	.267	n.s.
Between Reinforced (C ₁ , C ₂)	1	13.15	.112	n.s.
Interaction: A x B	1	.08	.001	n.s.
Interaction: A x C	1	253.78	2.168	n.s.
Interaction: B x C	1	5.64	.048	n.s.
Interaction: A x B x C	1	101.79	.869	n.s.
Within Groups	168	117.08		

Total 174

N = 175

According to Table XXXII the greatest differences occurred in the way the arithmetic teachers and the basic teachers estimated their pupils' potential for school success. However, pupils also differed with arithmetic and basic teachers in the way they viewed their own potential. The arithmetic teachers and the basic teachers were more in agreement with each other on their ratings of pupils in the areas of (1) positive self regard, (2) peer relationships, (3) attitude toward school, and (4) social adjustment, and estimates of student potential.

Pupils appeared to disagree with teacher ratings of pupils on: (1) peer relationships, (2) attitude toward school, and (3) estimates of potential. Whether the teachers held different standards than students was not determinable from the data.

TABLE XXXII
COMPARISON OF CORRELATIONS BETWEEN TEACHER AND PUPIL
RESPONSES TO FIRST SIX ITEMS ON ATTITUDE SURVEYS

	Bet. Math. Teachers & Basic Teachers	Bet. Math. Teachers & Pupil Self-Rating	Bet. Basic Teachers & Pupil Self-Rating
1. Positive Self Regard	.471	.338	.315
2. Peer Relationships	.368	.097	.200
3. Attitude Toward School	.505	.133	.089
4. Social Adjustment	.471	.204	.296
5. Estimate of potential	.201	.047	.091
6. Estimate of Capacity	.515	.240	.394

SUMMARY

Achievement variables. No significant differences were discovered among the different treatment groups in: (1) intelligence quotients, (2) arithmetic achievement, (3) reading comprehension, (4) grade-point averages for semester one, and (5) grade-point averages for semester two. However, a significant difference shown by fewer days of absence was found under the treatment involving teacher informed and pupil informed with reinforcement for the dependent variable labeled number of days of absence. Without reinforcement the same treatment group still showed a noticeable, but non-significant, difference in the number of days of absence. In addition the teacher informed group showed significantly fewer days of absence than the teacher not informed group.

Factor analysis of achievement variables: The factor analysis reduced the six variables to two. Factor I involved those variables that seemed to relate to general school ability while Factor II pertained to general school behavior. The analysis of variance for Factor I, general school ability, showed a significant interaction effect between the teacher informed and pupil informed conditions. The analysis of variance for Factor II, general school behavior, indicated no significant differences.

Attitude variables: Twenty-four items from the students' self-ratings, arithmetic teachers' ratings, and the basic teachers' ratings were reduced to five factors by factor analysis. The resultant factors

were: (1) arithmetic teacher responses, (2) basic teacher responses, (3) pupil self-ratings on effort, (4) pupil self-ratings on potential, and (5) pupil self-ratings on social functioning. Each of these factors were then submitted to separate analyses of variance. None of the F values produced by the five analyses of variance indicated that there were any significant differences for main effects or interactions.

The implications of these findings will be explored in the next chapter. Some of the data seem to offer some clues which might be worthwhile for further study. Hypotheses concerning the outcome of the study will also be discussed.

CHAPTER V

DISCUSSION OF FINDINGS

The preceding chapters have pointed out the rationale for conducting this study, the experimental procedures employed, and the results obtained. In this chapter an attempt will be made to examine the findings from the various analyses and to present the implications and possibly add some post-experimental thoughts about the developments that materialized as well as those that did not.

Although improvement was expected from the various treatments it was recognized that there was a possibility that the findings would show no differences regardless of the treatment attempted. Aubrey¹ cited recent findings by Dave and Bloom which showed that the level of school achievement and personality development tend to stabilize rather rapidly after the age of eight. Rosenthal and Jacobsen² also found that the younger, average ability children showed the most gain in their study.

I. ACHIEVEMENT VARIABLES

The remainder of this chapter is devoted to a discussion of each of the variables and the possible implications of the findings. Achievement variables will be presented first.

¹Roger F. Aubrey, "The Legitimacy of Elementary School Counseling: Some Unresolved Issues and Conflicts," The Personnel and Guidance Journal; 46:355-359, December, 1967.

²Rosenthal and Jacobson, op. cit., p. 176.

Dependent Variable Dealing with the Intelligence Quotient

The fact that no significant differences in intelligence quotients were found could possibly be attributed to the ineffectiveness of the treatment conditions. The short duration and limited number of contacts with pupils might have been insufficient to establish the necessary rapport to convey the desired expectancies to the student. However, some other factors that might have contributed to the lack of change in intelligence quotients include the following:

- 1) The test instrument might have been inappropriate for this population. A frequency distribution of the intelligence quotients obtained from this study showed that almost eleven per cent of the pupils received scores of seventy or below. In a normal distribution approximately two per cent would be expected in this range, and this two per cent would usually consist of pupils in mentally retarded classes. Inasmuch as all identified mentally retarded pupils were excluded from this study it seemed unlikely that these low scores were valid for the sample and non-sample pupils in regular classes. Based upon this limited experience with the tests of General Ability it might be concluded tentatively that the test did not adequately discriminate at the low end of the intelligence scale.

Thorndike³ also made similar conclusions concerning this test.

A primary reason for selecting this test was to compare the

³Thorndike, op. cit., p. 709.

findings for older pupils with Rosenthal and Jacobson's⁴ findings with younger children on the same test. In addition it was hoped that the Tests of General Ability might have proven to be a useful non-verbal type test for use with pupils with limited reading skills.

- 2) The attitudes of pupils toward tests in general might have influenced the results. Eisenberg⁵ reported that lower-class children were not test oriented and were likely to give any answer, right or wrong, in order to get out of the testing situation. He found that most of the children seemingly did not care whether they succeeded, and they had adopted this attitude as a defense against the expectation of failure.
- 3) Another possibility is that intelligence quotients do not change significantly at this age level. Bloom⁶ stated that by the age of four the child has developed fifty per cent of his mature intelligence, and he concluded that variations in environment would have relatively little effect on the intelligence quotient after age eight.

Dependent Variables Dealing with Arithmetic and Reading Achievement

The fact that no significant differences were found among the eight

⁴Rosenthal and Jacobson, loc. cit.

⁵Leon Eisenberg, "Some Children Are Convinced They Can't Win," Education Digest, XXXIII (September, 1967), pp. 9-12.

⁶Benjamin S. Bloom, Stability and Change in Human Characteristics (New York: John Wiley & Sons, 1964), p. 68.

treatment groups on either variable might suggest that the treatments had no effect on pupil achievement. Some of the same observations made about the intelligence quotients appear to be applicable to the achievement measures. Inappropriateness of the tests and pupil attitudes in taking the tests are two factors that might have had an undetermined influence on the data.

Dependent Variables Dealing with First and Second Semester Grades

A high correlation was found in Table XV among reading achievement, arithmetic achievement, and intelligence quotients, but grades had lower correlations with achievement and intelligence. The same pattern can be seen in Table XIV. These data might suggest that grades alone do not adequately represent a pupil's level of achievement.

The grades for the two semesters indicated a high degree of consistency among all of the treatment groups. This would suggest that the grading patterns of the teachers did not vary significantly, and, similarly, that pupil performance tended to remain consistent between the grading periods. Additional reasons for the lack of variance include the following:

- 1) The school policy permits the use of a "C" grade for pupils who are doing average work, but the same grade can be given to pupils who are judged by the teacher to be working to capacity even though the work is not average. These differences in quality of performance would not be evident in the semester grades.

- 2) All pluses and minuses on grades are ignored in computing the averages. Therefore, a small change could have taken place as in the case of a pupil who raised a grade from "C-" to "C+", but this change would not be shown in the semester average.

Dependent Variable Dealing With Days of Absence

The treatment group in which teachers were informed and reinforced and pupils were informed and reinforced demonstrated a significant reduction in the number of days of absence. This might suggest that when teachers and pupils were informed and reinforced a more positive attitude developed which contributed to improved attendance. What it is that led to this is not known but some hypotheses might include the following:

- 1) Teachers became more accepting of the pupils who had been pointed out to them.
- 2) Pupils sensed some difference in the teachers' attitudes or expectations.
- 3) Reinforcement helped in bringing about the improved attendance.

Dependent Variable Dealing With General School Ability

A significant difference was found in the interaction of the teacher informed condition and the pupil informed condition. Table XVI showed that when the teacher was informed and the pupil was not or when the pupil was informed but the teacher was not higher scores resulted. It might be concluded that for best results only one or the other should be informed but not both.

Dependent Variable Dealing With General School Behavior

The analysis of variance revealed no significant differences among the different groups. Even though the sum of squares due to the teacher informed and pupil informed interaction is about as great as the main effects, no conclusions can be drawn from these data which were found in Table XX, page 82.

II. ATTITUDE VARIABLES

It was noticed that no pattern of factor loading were evident in the pupil response section of Table XXI, page 84. This might be the result of an inadequately designed device which failed to measure these attitudes. Another reason might be the lack of reading comprehension on the part of pupils to interpret questions accurately and answer properly. Furthermore, an attitude of non-involvement by the pupils might have produced scores that fell mostly in the mid-range. Some of the scattered positive loading in Table XXI, page 84, suggested the following hypotheses:

- 1) Questions 1, 6, and 11 all related to effort produced high positive loadings, but questions 9 and 10 relating to grades produced negative loadings. This might suggest that effort and grades were not closely related in the minds of the students. In fact grades might even have a negative effect in self assessment and motivation.
- 2) Questions 3, 5, and 12 were all related to how the pupil likes school. This positive loading might indicate that enjoyment in achievement is related to enjoyment of school.

- 3) Questions 2, 3, 4, and 11 form a social conformity factor. The implication seemed to be that effort, enjoyment of school, and conformity to rules were closely related.

Dependent Variable Dealing With Ratings by Math Teachers

The factor loading pattern on Table XXI, page 84, indicated that the arithmetic teachers as a group were more positive in their ratings of pupils, but they also tended to be consistent with responses of the basic teachers. Analysis of variance produced no significant differences in the responses of arithmetic teachers for any of the treatment groups.

Dependent Variable Dealing With Ratings by Basic Teachers

No significant differences were found in the basic teacher's group responses. It appeared that the factor pattern of basic teacher responses did not consistently reflect those of the arithmetic teachers. One might wonder if these differences are produced by the nature of the subject matter. Perhaps in the arithmetic class most pupils can learn some of the operations because arithmetic might be easier to concretize and break down to small units, while in basic classes practically all success depends on reading skills. The fact that arithmetic teachers had the pupils for a single period, but the basic teachers had them for two consecutive periods might also have influenced the ratings.

Dependent Variable Dealing With Pupil Self-Rating on Effort

No significant differences were found in the way each group of pupils rated themselves on effort. Table XXVI, page 92, showed that the

majority rated themselves average, although some of these ratings are questionable. Often a pupil who was only a marginal student considered his expenditures of effort as adequate.

Dependent Variable Dealing With Pupil Self-Ratings on Potential

Most pupils tended to be modest and might have under-rated themselves, however, no significant differences were observed among the various cells. Therefore, it seems that on the whole, pupils were consistent in how they perceived their own potential.

Dependent Variable Dealing With Pupil Self-Rating on Social Functioning

Again, no significant differences were discovered. It might be concluded that most pupils tended to see themselves as generally conforming to social expectations. Whether this was a fact or only a belief on the part of the student rating himself might be questioned.

Other Observations

It was also interesting to note that Table XXXII, page 100, suggested that the teachers' ratings tended to correlate least with the pupils' self assessment of potential. This might suggest a gap in expectations between teacher and pupils. Perhaps this is one of the important questions to be answered, but this study was not designed to examine this variable more closely.

III. SUMMARY

It seems noteworthy that the means for the treatment groups were consistently alike from variable to variable. If a general statement

could be made about student academic achievement from these data, it might be that the treatments employed had no real effect on school achievement. There was a significant improvement in attendance which implies that the experimental treatments did make an impact and caused some change. The nature of this change needs to be explored more fully.

The two teacher ratings were generally in agreement but there was not as much agreement between the pupil self-ratings and the teacher ratings. This suggests a need for examining the reasons for these differences and narrowing them wherever possible. Possibly better self-assessment techniques and teacher assessment techniques need to be developed.

CHAPTER VI

CONCLUSIONS AND RECOMMENDATIONS

This chapter focuses upon the implications suggested by the data presented in Chapter Four and to examine the hypotheses previously presented and consider some recommendations for further study. It has only been possible to examine a limited number of techniques for working with students, and this study has been restricted to a single pupil population during one school year. Therefore, these conclusions must be viewed in this light.

- (1) Possible defects in research design and instrumentation. The lack of intergroup variance on all of the variables except attendance would suggest that the treatments employed in the study generally were ineffective in producing the anticipated results. Defects in experimental design might have contributed to the lack of more impressive gains. Certain dimensions which were not measured, or not readily measurable, might have been affected but were not assessed due to lack of sensitivity in the test instruments used. The measurement tools also might have failed to assess the affective domain.
- (2) Effects upon attendance. There was a significant improvement in attendance by the group receiving the benefit of teacher information, pupil information, and reinforcement. This might suggest that some important changes occurred to account for the observed differences, and it would further imply that

some of the conditions contributed to the resultant gains. To what extent the treatments were directly responsible is not ascertainable from the existing data. However, it can be concluded that the experimental treatments apparently were effective in this respect. Furthermore, extending the duration of the experiment might have produced more diverse and pronounced improvements. What was observed so far might have been only the beginning of changes in pupil behavior.

- (3) Early intervention. It would seem that intervention needs to come at an early age to have optimum value. The data from this study showed that little change occurred regardless of the treatments applied. This would tend to concur with findings of Bloom who contended that intellectual gains stabilize as early as age eight. On the basis of Bloom's¹ findings it would not be unexpected to find little or no gain from pupils of junior high school age. Similarly, they would be consistent with Rosenthal and Jacobson's² findings which indicated diminishing gains with progressive grade levels.
- (4) Current guidance practices. Inasmuch as this study employed some of the techniques conventionally used in school counseling, some questions might be raised as to the effectiveness

¹Bloom, loc. cit.

²Rosenthal and Jacobson, op. cit., p. 176.

of certain practices. It behooves guidance personnel to examine various techniques and methodology currently in use to determine whether their efforts actually produce the anticipated results.

- (5) Working with teachers. There was some indication in the data to suggest that informing teachers but not informing pupils seemed to be more productive than informing both teachers and pupils. However, informing pupils and not teachers had similar effects, so both treatments contributed positive results. With periodic reinforcement the effects seemed to be accentuated. It might be concluded that for optimum benefits more efforts by counselors should be directed toward communicating with teachers. This could be an important source of preventive involvement.
- (6) The self-fulfilling prophecy. The self-fulfilling prophecy hypothesis has not been adequately corroborated, but by no means discounted by this study. Despite the concentrated treatments the results were not considerable, but the fact that one variable proved significant offers hopes that other techniques, approaches, and application of personnel might prove more successful. It might be concluded that a slight demonstration of the self-fulfilling prophecy was observed with the implication that some changes had occurred in the people involved. Further study of these effects would be

warranted.

Recommendations for Further Study

- (1) Replication of this study with a younger population to examine the effects which might develop seem to be worthwhile. A comparison of such findings with those of the South San Francisco study by Rosenthal and Jacobson would also be interesting.
- (2) Research to determine what alternative treatments by teachers, counselors, and other personnel might produce desirable improvement in pupils is greatly needed. Regardless of the labels, motivation, inspiration, expectancies, or whatever is currently in vogue, the teacher has always been faced with the question of how to bring forth the best from the pupils entrusted to him.
- (3) Further study of the attendance variable analyzed in this study might lead to generalizations which could be applied to helping larger numbers of pupils. The causes underlying the significant reduction of absences seem to need closer scrutiny.
- (4) Additional research to determine optimum ages at which individuals are most receptive to self enhancing measures might increase the public awareness necessary for improved early childhood programs. Existing studies have indicated the tendency for protective mechanisms of individuals to make people less flexible with increasing age and environmental exposure. Yet, our society generally ignores this knowledge and consequently expends considerable effort and money for correction rather than prevention.

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APPENDIX

APPENDIX A

Teacher: _____

Date: _____

Please rate your students on the following items using the attached cards. We would like all six items filled in for each student. Your best judgment is sufficient.

Item 1. Positive Self Regard

Seems to feel he is doing a satisfactory job

Low	Fair	Average	Above Average	High
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Item 2. Peer Relationships

Gets along well with peers

Poor	Fair	Average	Above Average	Excellent
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Item 3. Attitude Toward School

Seems to enjoy school

Negative	Below Average	Average	Above Average	Positive
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Item 4. Social Adjustment

Generally follows rules of good conduct

Poor	Below Average	Average	Above Average	Excellent
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Item 5. Teacher's Estimate of Student's Potential

Seems to be capable of doing better in school

Unlikely	Small Chance	Average Chance	Good Chance	Strong Chance
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Item 6. Teacher's Estimate of Student's Capacity

Apparent level of intellectual functioning compared with most students at this school

Much lower than most	A little less than most	About the same as most	A little better than most	Much better than most
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

APPENDIX B

1. What kind of a job are you doing in your classes?
2. How do you get along with the kids in school?
3. Do you enjoy being in school?
4. Do you obey the rules of good conduct set by teachers in school?
5. Do you feel that you are capable of doing better in school?
6. How capable do you feel you are?
- Not good
- Below Average
- Average
- Better than Average
- Extremely Good
- Not good
- Below Average
- Average
- Above Average
- Excellent
- Never
- Seldom
- Sometimes
- Most of the time
- Always
- Never
- Seldom
- Sometimes
- Most of the time
- Always
- Absolutely Not
- Small Chance
- Average Chance
- Good Chance
- Definitely Yes
- Much lower than most kids
- A little less than most
- About the same as most
- A little better than most
- Much better than most

7. Are you a girl or a boy?

<input type="checkbox"/>	Girl	<input type="checkbox"/>	Boy
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8. How many years have you gone to Stockton schools?

<input type="checkbox"/>	1 to 2 yrs.	<input type="checkbox"/>	3 to 4 yrs.	<input type="checkbox"/>	5 to 6 yrs.	<input type="checkbox"/>	7 to 8 yrs.	<input type="checkbox"/>	9 to 10 yrs.
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9. What was your most recent grade in English?

<input type="checkbox"/>	A	<input type="checkbox"/>	B	<input type="checkbox"/>	C	<input type="checkbox"/>	D	<input type="checkbox"/>	E
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10. What was your most recent grade in Math?

<input type="checkbox"/>	A	<input type="checkbox"/>	B	<input type="checkbox"/>	C	<input type="checkbox"/>	D	<input type="checkbox"/>	E
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11. How much effort do you put into your school work?

<input type="checkbox"/>	Almost None	<input type="checkbox"/>	Less than most kids	<input type="checkbox"/>	About the same as most kids	<input type="checkbox"/>	More than most kids	<input type="checkbox"/>	A great deal
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12. How far do you plan to go in school?

<input type="checkbox"/>	Would quit now if I could	<input type="checkbox"/>	Quit school at age 18	<input type="checkbox"/>	Finish high school	<input type="checkbox"/>	2 years junior college	<input type="checkbox"/>	4 or more yrs. of college
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APPENDIX C

7th Grade Testing Schedule

Period	Monday 4/28	Tuesday 4/29	Wednesday 4/30	Thursday 5/1	Friday 5/2
I			006		003
II	004	013	Room 52		Room 46
III	Room 48	Room 3	007		
IV	002	015	Room 52		
V	Room 48	Room 3			
VI	011	009			005
VII	Room 48	Room 3			Room 52

7th Grade Testing Schedule

Period	Monday 5/5	Tuesday 5/6	Wednesday 5/7	Thursday 5/8	Friday 5/9
I	012	001	Make-Up Test		
II	Room 2	Room 42	Session		
III	014	018			
IV	Room 2	Room 42			091 Room 1
V					092 Room 1
VI	016	010			103 Room 1
VII	Room 2	Room 42			104 Room 1

7th Grade Testing Schedule

	Monday 5/12	Tuesday 5/13	Wednesday 5/14	Thursday 5/15	Friday 5/16
I	094 Room 13	095 Room 31			
II	096 Room 13	101 Room 45		100 Room 35	
III	090 Room 13	102 Room 13		Make-Up Tests	
IV		097 Room 35			
V					
VI	098 Room 13	099 Room 33		093 Room 32	
VII		088 Room 35		089 Room 32	

APPENDIX D

MEANS AND STANDARD DEVIATIONS FOR TEACHER AND PUPIL
RESPONSES ON ATTITUDES SURVEY

	ITEMS	MEANS	STANDARD DEVIATIONS
Pupil Responses	1	7.0172	.854
	2	6.4318	1.106
	3	6.3466	1.028
	4	6.1648	.893
	5	5.8864	.947
	6	6.7102	.911
	7	8.3409	.689
	8	6.5114	1.055
	9	7.1486	.980
	10	7.6534	.947
	11	6.7102	.978
	12	5.8046	.957
Basic Teachers' Responses	1	7.0170	1.084
	2	6.6989	1.025
	3	6.7029	1.133
	4	6.6307	1.110
	5	6.7727	.956
	6	6.7029	.981
Arithmetic Teachers' Responses	1	7.0625	1.088
	2	6.7273	.836
	3	6.8864	1.117
	4	6.7727	1.079
	5	6.8295	.980
	6	6.9375	1.007

APPENDIX E

	1	2	3	4	5	6	7	8	9	10	11	12
	STUDENTS											
1.	1.000	.174	.209	.139	.080	.403	.030	.067	-.526	-.325	.403	.153
2.	.174	1.000	.133	.072	.058	.192	-.068	.083	-.047	-.080	.247	.078
3.	.209	.133	1.000	.328	.268	.216	-.063	.072	-.039	-.116	.332	.328
4.	.139	.072	.328	1.000	.130	.156	-.119	-.017	-.086	-.181	.276	.068
5.	.080	.058	.268	.130	1.000	.225	-.002	-.056	-.050	-.076	.179	.299
6.	.403	.192	.216	.156	.225	1.000	-.141	.006	-.342	-.255	.231	.269
7.	.030	-.066	-.063	-.119	-.002	-.141	1.000	-.052	.237	.042	.037	.024
8.	.067	.083	.072	-.017	-.056	.006	-.052	1.000	-.057	-.010	-.022	.139
9.	-.526	-.047	-.039	-.086	-.050	-.342	.237	-.057	1.000	.411	-.211	-.213
10.	-.325	-.080	-.116	-.181	-.076	-.255	.042	-.010	.411	1.000	-.305	-.257
11.	.403	.247	.332	.276	.179	.231	.037	-.022	-.211	-.305	1.000	.201
12.	.158	.076	.328	.068	.299	.269	.024	.139	-.213	-.257	.201	1.000
1.	BASIC TEACHERS											
1.	.315	.065	.076	.138	.113	.396	-.091	.072	-.553	-.337	.76	.189
2.	.254	.200	.072	.129	.029	.308	-.152	.158	-.404	-.271	.111	.174
3.	.321	.166	.089	.189	.117	.391	-.199	.128	-.479	-.378	.176	.225
4.	.273	.144	.172	.296	.047	.349	-.244	.093	-.467	-.359	.195	.121
5.	.047	.018	.057	.084	.091	.087	-.020	-.076	-.116	-.087	.009	.031
6.	.359	.103	.123	.141	.148	.394	-.229	.056	-.540	-.387	.189	.202
1.	MATH TEACHERS											
1.	.338	.115	.143	.212	.057	.328	-.074	.140	-.329	-.508	.268	.272
2.	.223	.097	.110	.228	.126	.135	-.036	.100	-.229	-.364	.147	.142
3.	.158	.063	.133	.190	.144	.275	-.068	.107	-.265	-.408	.162	.216
4.	.128	.097	.030	.204	.069	.072	-.079	.122	-.157	-.299	.126	.048
5.	.325	.126	.121	.227	.047	.288	-.040	.134	-.384	-.486	.192	.222
6.	.355	.177	.114	.214	.028	.240	-.076	.142	-.413	-.458	.224	.232

CORRELATIONAL MATRIX OF ITEM RESPONSES ON SURVEY FORM
BY STUDENTS AND TWO GROUPS OF TEACHERS

	1	2	3	4	5	6	1	2	3	4	5	6	
	BASIC TEACHERS						MATH TEACHERS						
STUDENTS	1.	.315	.254	.321	.273	.047	.359	.338	.223	.158	.128	.325	.355
	2.	.065	.200	.166	.144	.018	.103	.115	.097	.063	.097	.126	.177
	3.	.076	.072	.089	.172	.057	.123	.148	.110	.133	.030	.121	.114
	4.	.138	.129	.189	.296	.084	.141	.212	.228	.190	.204	.227	.214
	5.	.113	.029	.117	.047	.091	.148	.057	.126	.144	.069	.047	.028
	6.	.396	.308	.391	.349	.087	.394	.328	.135	.275	.072	.288	.240
	7.	-.091	-.152	-.199	-.244	-.020	-.229	-.074	-.036	-.068	-.079	-.040	-.076
	8.	.072	.158	.128	.093	-.076	.056	.140	.100	.107	.122	.134	.142
	9.	-.553	-.404	-.479	-.467	-.116	-.540	-.329	-.229	-.265	-.157	-.384	-.413
	10.	-.337	-.271	-.378	-.359	-.087	-.387	-.508	-.364	-.408	-.299	-.486	-.458
	11.	.176	.111	.176	.195	.009	.189	.268	.147	.162	.126	.192	.224
	12.	.189	.174	.226	.121	.031	.202	.272	.142	.216	.048	.222	.232
BASIC TEACHERS	1.	1.000	.551	.677	.557	-.051	.634	.471	.312	.405	.334	.441	.443
	2.	.551	1.000	.690	.746	.139	.542	.389	.368	.357	.303	.469	.444
	3.	.677	.690	1.000	.753	.036	.649	.498	.384	.505	.369	.489	.468
	4.	.557	.746	.753	1.000	.178	.644	.414	.436	.479	.471	.501	.462
	5.	-.051	.139	.036	.178	1.000	.244	-.019	-.070	-.035	-.056	.001	.003
	6.	.634	.542	.649	.644	.244	1.000	.514	.362	.447	.367	.543	.515
MATH TEACHERS	1.	.471	.389	.498	.414	-.019	.514	1.000	.656	.716	.448	.810	.803
	2.	.312	.368	.384	.436	-.070	.362	.656	1.000	.740	.713	.665	.628
	3.	.405	.357	.505	.479	-.035	.447	.716	.740	1.000	.681	.668	.640
	4.	.334	.303	.369	.471	-.056	.367	.448	.713	.681	1.000	.539	.494
	5.	.441	.469	.489	.501	.001	.543	.810	.665	.668	.539	1.000	.882
	6.	.443	.444	.463	.462	.003	.515	.803	.628	.640	.494	.882	1.000

CORRELATIONAL MATRIX OF ITEM RESPONSES ON SURVEY FORM
BY STUDENTS AND TWO GROUPS OF TEACHERS